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THE LARYNGOSCOPE.

Vol. XXXIV ST. LOUIS, AUGUST, 1924.

No. 8

ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

CORRECTION OF CONGENITAL DEFORMITIES OF THE NOSE. A REPORT OF NINE SELECTED CASES.

DR. JOSEPH D. LEWIS, Minneapolis, Minn.

Congenital deformities of the nose are multiform, ranging from irregularities of moderate degree, to malformations so exaggerated as to be truly grotesque.

Practically all congenital nasal deformities are due to either deficient or excessive structural development, and accordingly may be divided into two general groups, namely, depressed and elevated, and classified as follows:

Depressed: Retroussé nose, pug nose, saddle nose, tip depressions, flat or broad nose.

Elevated: Hump nose, aquiline nose, long nose, large nose.

To these, still a third, or miscellaneous group might be added to include the many other varieties of congenital nasal deformities; but, as they are, with few exceptions, combinations of the definite types just mentioned, to which I intend to confine my remarks, a further classification will not be attempted in the present article.

The prime object of an operation performed for the correction of a malformed nose is to elevate depressions when structural insufficiency is responsible, or, to remove excessive tissue in the protuberant types. In accomplishing this the factors which justly take the foremost place of interest, to both patient and surgeon, are (1) to avoid producing an unsightly scar; (2) to employ a method which is reasonably, perhaps entirely, free from the dangers of infection, and (3) to obtain the desired result without causing the patient unnecessary discomfort and inconvenience by subjecting him to a mutilating operation on another part of the body.

It is with the belief that by the methods and operative technic described in the succeeding paragraphs, the foregoing requisites

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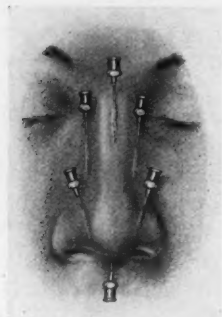


Fig. 1. Method of circuminjection in operations on the nose.



Fig. 2. Base of the nose. a. Incision in median line of columna nasi; b. area of nasal tip undermined to form a hood.

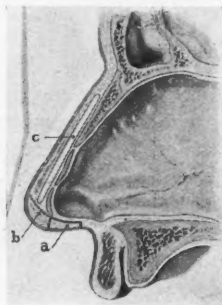


Fig. 3. Profile view of nose showing. a. columnar incision; b, under cut portion of nasal tip; c, implant occupying dorsal tunnel.

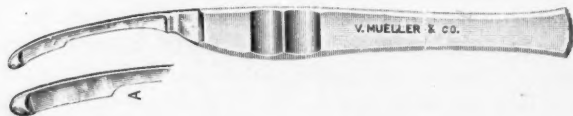


Fig. 4. Author's bistoury. The shank A (pictured in actual size), is dull and the point of cutting extremely blunt, so that the dorsal tunnel can be enlarged without wounding other parts.

have been successfully met—these, and the results they have yielded, are offered largely as a basis for comparison with the procedures hitherto followed.

Preparation and anesthesia: After clipping away the vibrassae of the vestibule, the nasal mucosa is sprayed with warm Dobell's solution and then swabbed with a 10 per cent cocain solution. The anterior nares are tightly packed with gauze or cotton, and the



Figs. 5 and 6. (Case 1.) Pre-operative appearance.



Figs. 7 and 8. (Case 1.) Post-operative result.

skin of the nose, part of the forehead, cheeks and the upper lip, are sterilized with McDonald's solution. The patient is placed in the recumbent position, and a piece of moist sterile gauze, having a central opening to expose the nose, is placed over the head and face.

Complete anesthesia of the nasal structures is obtained by circuminjection of the operative field with 10 or 12 c.c. of a 1 per cent

novocain solution, to which 5 drops of epinephrin are added, at the points indicated in Fig. 1.

Operative technic: A subcutaneous tunnel, extending from the base of the nose to the radix nasi, is made in three steps: first, a vertical incision about $1\frac{1}{2}$ cm. in length is made directly in the midline of the lower two-thirds of the columna nasi (a, a, Figs. 2 and 3); second, the lips of the incision and the tip of the nose are



Figs. 9 and 10. (Case 2.) Pre-operative appearance.



Figs. 11 and 12. (Case 2.) Post-operative result.

undermined with a knife and Stevens eye scissors, which converts the nasal tip into a hood, as indicated by the dotted line b, b, in Figs. 2 and 3; and third, with the same scissors, introduced on the flat, a tunnel is cut over the nasal dorsum (c, Fig. 3).

Obviously, if the tunnel is intended for the reception of a prosthesis, it is of exceeding importance that it be placed precisely in



Figs. 13 and 14. (Case 3.) Pre-operative appearance.



Figs. 15 and 16. (Case 3.) Ten days after operation.



Figs. 17 and 18. (Case 3.) Two and one-half years later. This shows how well celluloid implants are assimilated by the nasal tissues.

the middle of the nasal dorsum, otherwise, lateral displacement of the implant is sure to follow and thereby greatly impair the cosmetic result. When made for the purpose of introducing instruments for the removal of excessive tissue, the tunnel is extended laterally over the nasal bones and frontal processes of the maxillae, with the special bistoury shown in Fig. 4.



Figs. 19 and 20. (Case 4.) Pre-operative appearance.



Figs. 21 and 22. Result fifteen months after operation.

The incision is closed with two or three interrupted collodionized silk sutures.

Following an operation performed for the removal of excessive tissue, a Simpson-Bernay sponge is placed over the dorsum and one on either side of the nose, and held in position with several adhesive strips applied from cheek to cheek. The sponges are moistened to cause their expansion and thus increase the pressure, which checks the oozing and prevents the formation of a hematoma.

The dressing is removed on the day following the operation. The columnar wound is left exposed and moistened at short intervals with a weak mercuric chlorid solution to prevent scab formation. The sutures are removed on the third day. The columnar incision promptly heals and the scar fades away until it becomes imperceptible.



Figs. 23 and 24. (Case 5.) Pre-operative appearance.

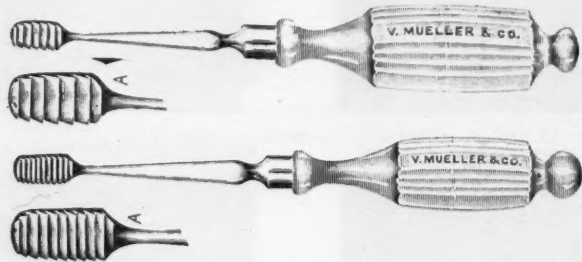


Figs. 25 and 26. (Case 5.) Post-operative result.

When a large prosthesis is required, or the depressed deformity has resulted from an injury which has wounded the superficial as well as the deeper structures, and scar tissue has formed upon the nasal dorsum, undoubtedly it is advisable to divide the operation into two stages.

The modified method differs from that described in the original paper,¹ and again outlined in the preceding paragraphs, in this par-

ticular: A period of four days is allowed to elapse after making the dorsal tunnel before the prosthesis is introduced, to allow the lymph drainage and blood supply to become partially readjusted. The advantages of the two-stage procedure, which is similar in essential principles to the delayed flap method, are (1) the marked reduction of post-operative reaction; (2) the partially re-established lymph drainage and blood supply, together with the attendant cellular infiltration, seemingly so completely to fortify the tissues against infection as to render this danger a negligible factor; (3) because of the fibrinous exudate which forms on the walls of the tunnel surfaces during the brief period between operations, the implant can be introduced into the previously prepared tunnel with surprisingly little resistance and therefore without inflicting much further injury to the tissues. The amount of traumatism and post-operative



Figs. 27 and 28. Author's raspatories. (A. A. actual size.) The rasp with coarse teeth is employed to remove excessive bone and the finer one to smooth it.

reaction are considerable when a large prosthesis is inserted at the primary operation. The two-stage method, as we have learned from the merits of the delayed flap procedure, is in obedience to sound fundamental surgical principles. However, if the nasal tissues are free from scar, small implants may be introduced in one operation with comparative safety.

The columnar route seems by far preferable for the following reasons: (1) the field is amenable to sterilization; (2) wound infection, even in the presence of atrophic rhinitis or suppurative ethmoiditis, has not occurred in a series of 73 operations; (3) extrusion of the prosthesis is prevented by the support afforded by the tip hood; (4) the sutures which close the incision are well removed from contact with the prosthesis. Obviously a method that does not adequately insure against infection and extrusion cannot succeed. Therefore, it is highly essential that the supporting

material be completely buried in tissues having an ample blood supply, and that the sutures be placed at some distance from the prosthesis; otherwise, pressure necrosis, and the devitalizing effect of the stitches, are factors which will combine to kill the tissue cells, and consequently, inevitable extrusion of the prosthesis will defeat a well intended endeavor.

And, as we shall see, the columnar method of approach has a wide range of application.

Report of Cases: Figs. 5, 6, 7 and 8. (Case 1.) Retroussé nose. Operation, April, 1923. While making the dorsal tunnel, preparatory to introducing a celluloid prosthesis, I inadvertently buttonholed the cutaneous tissues. The wound and the initial incision (a, Fig. 2) were immediately sutured. In this case—a not marked depression—



Fig. 29. (Case 6.) Pre-operative appearance.
Fig. 30. (Case 6.) Post-operative result.

I had planned to introduce the implant at the conclusion of the tunnel operation; but, owing to the accident referred to, and knowing from previous experience that when a celluloid implant comes in contact with the suture line, extrusion of the prosthesis will follow for the reasons previously pointed out. Therefore, introduction of the implant was deferred for ten days to allow the dorsal wound to heal, when the tunnel was reopened and a suitably shaped celluloid implant was introduced. I was struck, first by the slight reaction following the first operation; second, by the ease with which the tunnel was reopened, and the comparatively slight resistance offered by the tissues to the introduction of the implant, and third by the almost complete absence of reaction attending this, the second stage operation.

Here was evidence renewed, if any be needed, of the merits of the delayed flap method.

And so it happened, from the knowledge gained in this case, that the several distinct advantages of the two-stage method were forcibly brought to my notice and decided me to adopt it in selected cases.

Figs. 9, 10, 11 and 12. (Case 2.) Pug nose. The operative procedure in this case differed from that of the preceding one only in that the interval between operations was shortened to four days.

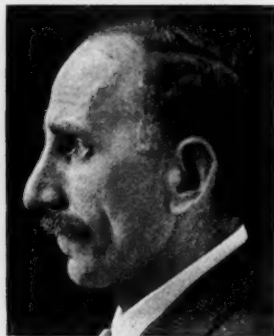
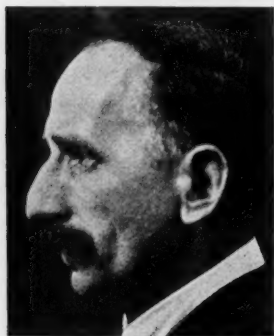


Fig. 31. (Case 7.) Pre-operative appearance.
Fig. 32. (Case 7.) Post-operative result.



Fig. 33. (Case 8.) Pre-operative appearance.
Fig. 34. (Case 8.) Post-operative result.

The excellent result obtained in this case well illustrates how a celluloid implant can be so fashioned as to impart a naturalness to the nasal contour.

Figs. 13, 14, 15, 16, 17 and 18. (Case 3.) Saddle nose. There being no history of injury, or any evidence of a previous pathological condition to explain the origin of the depression, this case is



Fig. 35. Columnar tissues divided and retracted to expose the columella.

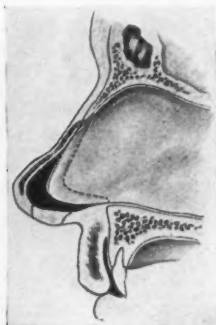


Fig. 36. Dotted line shows limit of mucoperichondrium elevated preliminary to resecting that portion of the septum indicated by the dark area.



Fig. 37. a. V-shaped section removed from columella to bring nose into its new position.



Fig. 38. V-shaped segment removed from columna.

Fig. 39. Incision sutured. Height and length of nose reduced and shape of the nostrils changed.

therefore classed as a congenital deformity. The depression was corrected in one operation (July, 1921). The first post-operative photographs were made two weeks after the operation, and the second two and one-half years later. The accompanying photographs show how well celluloid is assimilated by the tissues.

Figs. 19, 20, 21 and 22. (Case 4.) Depression of the nasal tip. Operation, January, 1923. The operation of tunneling the nasal tip



Figs. 40 and 41. (Case 9.) Pre-operative appearance.



Figs. 42 and 43. (Case 9.) Post-operative result.

and dorsum was similar to that followed in the preceding case. The deformity was corrected by first removing the protuberant portion of the nasal dorsum with the rasps pictured in Figs. 27 and 28, and then elevating the nasal tip with a suitably shaped celluloid implant. The post-operative photographs show the result fifteen months after the deformity was corrected.

Figs. 23, 24, 25 and 26. (Case 5.) Flat or broad nose. The operative procedure in this case differed from that employed in the preceding ones in several particulars. The undermining of the dorsum was extended laterally with the special bistoury shown in Fig. 4. Following this step, the projections of the nasal and frontal processes of the maxillae were removed with rasps, thus reducing the width of the nose. As the elevation of the soft tissues in this case was quite extensive, and realizing that a rather large implant would be required to obtain the desired result, a two-stage operation was considered advisable; therefore, the columnar incision was closed and a compression dressing applied in a manner already described. The second stage of the operation was completed four days later. This consisted in reopening the dorsal tunnel and introducing a suitably fashioned celluloid implant to build up the nasal dorsum and raise the tip of the nose.

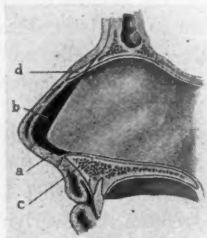


Fig. 44. a, columnar incision; b, septal cartilage removed; c, overdeveloped portion of the anterior nasal spine removed as far as broken line; d, portions of nasal bones removed with rasps.

Fig. 45. Nose resting in its new position after removal of parts as shown in Fig. 44, and the accompanying photographs, Figs. 42 and 43.

Four days later a celluloid implant, fashioned to elevate the tip and dorsum of the nose, was introduced.

Comment: We know that rough foreign bodies, and substances that are not wholly inert, when introduced into the tissues of the body, even under perfect aseptic conditions, cause mechanical or chemical irritation, acting singly or together, and, as a consequence, pathological conditions are set up which may eventuate in spontaneous expulsion of the offender, or surgical removal may be required.

And thus from these premises arose the unfortunate prejudice against the use of all foreign substances. But data, drawn from the sphere of clinical experience, show that celluloid neither acts on nor is affected by the body tissues, and therefore it cannot with justice, be relegated to a category of inorganic substances known to be tissue irritants.

Assertions that celluloid acts as a tissue irritant and ultimately becomes extruded, are not supported by actual experience and, therefore, they who have so warmly condemned the method are not qualified to speak against it; nor is there a clinical basis, as will be shown, on which to reject it.

The true explanation is that celluloid is not digested by the body tissues; inclusion, or rather isolation, takes place by adoptive changes of the body tissues whereby the material is assimilated by the process of encapsulation.

Clinically, this has been conclusively proved by Fraenkel² (who conceived the celluloid idea), Hintersteisser,³ Föderl⁴ and Koshier,⁵ in Europe, Thompson,⁶ in South America, and abundantly confirmed by Monks,⁷ New,⁸ and myself,⁹ in this country.

In my series of 32 implantation operations the celluloid prostheses have remained as introduced, without evidence of the slightest irritation, over periods ranging from a few months to six years.

In view of these facts, it does not seem to involve contradiction to assert that neither the opposition to the use of celluloid for the correction of depressed nasal deformities, nor the present prestige of the autotransplantation method, will long survive.

Figs. 29 and 30. (Case 6.) Hump nose. In this case, as in the preceding ones, access to the nasal dorsum was gained through a columnar incision. The tunnel dissection was extended laterally with the bistoury already mentioned, to release the overlying soft tissues of the nasal and frontal processes of the maxillary bones, preliminary to removing the excessive bone with rasps. To avoid broadening the nasal arch in correcting protuberant deformities of this type, it is necessary to remove some of the frontal processes of the maxillae.

Figs. 31 and 32. (Case 7.) Aquiline nose. The operative procedure followed in this case was similar to that described in the preceding one.

Figs. 33 and 34. (Case 8.) Long nose. As the method employed for the correction of this protuberant deformity is probably original, the operative technic will be described in detail. The columnar incision was deepened until the free border of the septal cartilage was exposed, as shown in Fig. 35.

The elevation of the mucoperichondrium was continued upward on both sides of the septum until the elevator was felt beneath the skin of the nasal dorsum, and backward as far as required, as indicated by the broken line in Fig. 36. The septal cartilage was then detached from the overlying soft parts of the nasal dorsum. The next important step consisted in resecting the desired amount of

the anterior and superior portions of the quadrilateral cartilage, corresponding to the shaded area shown in Fig. 36.

This left considerable redundant tissue at the nasal tip and columna, which was removed by resecting a triangular shaped section from the columna as shown in a, Figs. 37 and 38.

Six sutures were used to close the vertical and transverse columnar incisions, as illustrated in Fig. 39. At the conclusion of the operation the anterior nares were lightly packed with iodoform gauze, impregnated with a 10 per cent bismuth paste. Several adhesive strips were used to retain the nose in its new position for five days.

The accompanying post-operative photograph was made five days after operation, and therefore before the edema had entirely disappeared, or healing of the columnar wound was complete. The gauze dressing was changed daily and discontinued on the sixth day. Sutures were removed on the following day.

As will be seen by a glance at the accompanying photographs, the height and length of the nose were reduced, and this in turn altered the size and shape of the nostrils.

Figs. 40, 41, 42 and 43. (Case 9.) Large nose. (Rhynomeglia.) For the correction of this extreme and unusual type of deformity, the procedure employed in the preceding case was elaborated to combine the effect of reducing the height and length of the nose, and also to facilitate removal of the overdeveloped anterior nasal spine of the maxilla.

As the operative technic of rhinomiosis here proposed presents some technical difficulties, even to one highly skilled in other branches of rhinologic surgery, or proficient in plastic operations in general the important technical steps of the procedure will be described in detail.

The cartilaginous septum having been brought into view, a partial submucous resection was done, and segments of the quadrilateral cartilage resected (b, Fig. 44) by a procedure similar to that described in the preceding case.

At this point, through the columnar incision and between the mucoperichondrial flaps, the cutaneous tissues over the nasal and frontal processes of the maxillary bones were released with the scissors and bistoury already mentioned, and the remaining projecting bony portion of the nasal dorsum was removed with rasps (d, Fig. 44). Without lengthening the columnar incision the soft parts attached to the anterior nasal spine were freed, and with a heavy rongeur forceps, introduced into the pocket, the desired

amount of the overdeveloped bone was removed as shown in c, Fig. 44.

The nose was then brought down into its new position (Fig. 45) where it was held with a buried catgut suture that engaged the upper portion of the philtrum and the deeper soft structures.

The columnar incision was closed in the usual way and the nose retained in its new position for five days with several adhesive strips. And thus the shape and size of the nose were satisfactorily, altered in one operation, through a single external incision, and without entering the nasal chambers.

The postoperative result, as shown in the accompanying photographs, made five days after the operation (when the patient returned to her home in Washington), seems all that could be desired. Further improvement may be expected to follow complete disappearance of the edema.

I hope some of the suggestions offered in this article may be found of practical value to others interested in this special branch of rhinology, and in turn prove helpful in delivering those afflicted with a conspicuous nasal deformity from the melancholy retirement that so often claims them.

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I have previously reported Case 3; but as the photographs showing the final result were only recently obtained, it is again presented.

516 La Salle Building.

A CASE OF PNEUMOCOCCIC MENINGITIS WITH APPARENT CURE FOLLOWED BY AN OBSCURE FRONTAL LOBE ABSCESS.*

DR. HENRY S. WIEDER, Philadelphia.

At the May meeting of this Society the writer reported "two contrasting cases of mastoiditis with meningeal involvement", (*Eye, Ear, Nose and Throat Monthly*, Aug., 1923), one of which was of the mixed pneumococcic and streptococcic type in which the pneumococcus was apparently killed, but the streptococcus persisting proved fatal to the patient. In summing up the case the following statement was made: "However while neither of these two cases resulted favorably, they point to a possible method of successfully combating pneumococcic meningitis in the absence of mixed infection."

Tonight he wishes to report a case of pure pneumococcic infection which partially bears out this statement, for, while the patient has fully recovered from his meningitis, he is still suffering from some intracranial infection, to locate which efforts have thus far proved unavailing. The history in detail is as follows:

M. C., 38, male, white, laborer, was admitted to the Polyclinic Hospital, Aug. 13, 1923, 5:30 p. m., with a history of having had the ordinary diseases of childhood, including scarlet fever. Ten years ago he had an abscess in the right ear, which discharged ten days and had caused trouble once since that time. The present illness began June 1, 1923, when he suffered from earache, the ear discharging that night. He was treated by his family physician and on admission stated that he had had tenderness over the mastoid for some time. On Aug. 11 he began to have pain in the ear, severe headache, nausea and vomiting.

When admitted to the Polyclinic Hospital there was considerable discharge from the right ear with marked tenderness over the mastoid. The left ear was normal. The patient complained of severe headache, had a staggering gait, nausea and vomited. There was marked rotary nystagmus to the left and some stiffness and soreness in the muscles of the neck. Temperature was 99.2°, pulse 70, respiration 22. At noon, Aug. 14, when the writer was called to see the case, he found the patient in practically the same condition as on admission; temperature 100°, pulse 62, respiration 20. The urine showed faint traces of albumin, no casts, few leucocytes

*Read before the Philadelphia Laryngological Society, Dec. 4, 1923.

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and phosphates. Blood count was red blood cells 5,120,000, leucocytes 20,250, differential small lymphocytes 6 per cent, polymorphonuclear leucocyte 94 per cent. After examination prompt mastoidectomy was decided upon, which was accordingly performed at 4 p. m. the same day. The operation consisted of simple mastoidectomy, which it was thought would be sufficient to relieve the source of infection, check the labyrinthian irritation and threatened meningitis. The sulcus incision was made and the antrum uncapped. The superficial bone was dense and sclerotic, but that underlying was soft and necrotic. About a half drachm of pus was found. All necrotic bone was removed and the dura was exposed over the lateral sinus, but the sinus was found normal. Drainage was introduced and the wound sutured.

The patient reacted well after operation, but by 10 o'clock that evening he complained of some headache of a throbbing character.

The following day he still had headache and complained of some stiffness of the neck and legs. Nystagmus persisted, but was not so marked. At 2 p. m. a distinct Kernig's sign being present, a spinal puncture was made by Dr. Boone, the resident on the case. About 15 c.c. of cloudy fluid was removed and examined immediately. The report of Dr. Ling, resident pathologist, was 3000 cells per cubic millimeter, 100 per cent polymorphonuclear, with a considerable number of pneumococci on smear.

Without waiting for any further study of the fluid a solution of 1/1000 optochin (ethyl hydro cuprin) was prepared and sterilized for one hour at 60° C.

At 4:30 p. m., Dr. Dorsavage, the surgical interne, performed spinal puncture, evacuated 20 c.c. turbid fluid and injected 15 c.c. of the optochin solution. The mastoid dressing was changed and the wound redressed with packing soaked in the optochin solution.

At 11:30 p. m., spinal puncture was performed, 30 c.c. of turbid fluid was removed and 25 c.c. of pneumococcic antibody was injected.

On Aug. 16, 1923, at 8 a. m., 23 c.c. spinal fluid was removed and 18 c.c. pneumococcic antibody injected.

At 2 p. m., 30 c.c. of turbid spinal fluid was removed and 25 c.c. pneumococcic antibody injected. The patient complained of pain in the left leg and rectum shortly afterwards, but the pain was of only a few minutes duration. Examination of the spinal fluid showed 5000 cells per c.m. and contained many pneumococci on smear, but most of them were now intracellular and many involution forms were present.

At 8 p. m., 20 c.c. of turbid spinal fluid were withdrawn and 15 c.c. of optochin solution injected. The wound was redressed with optochin packing and gauze.

At 8 a. m., on Aug. 17, 1923, an effort to get into the spinal canal was unsuccessful. However, the patient appeared to show distinct improvement. The temperature, which had reached 103° on Aug. 15, 1923, was now 100.2° , pulse between 60 and 70. Nystagmus was still present, but not so active. Kernig's sign was still present, more marked on the left side.

Hearing tests showed: Right ear, air conduction absent for the C128 fork, but the patient claimed that bone conduction was heard in this ear. He also claimed to hear the C512 on heavy percussion of the fork and the Galton whistle, but this was not positive, as no noise apparatus was at hand to use in the sound ear. Weber was referred to the left.

At 2 p. m., another dry tap was obtained. This was probably due to the chemical irritation of the meninges from the optochin as the mastoid wound also showed marked irritation from the drug.

Being unable to medicate by means of the spinal canal, it was determined to use the veins. Accordingly, at 8 p. m., 50 c.c. of pneumococcic antibody was given intravenously. This was followed by a few light chills, but no rise in temperature.

The following day the temperature touched 98° , pulse 60, respiration 20, not to remain there for long as an intravenous injection of 100 c.c. of pneumococcic antibody caused it again to rise to 101° temporarily. The patient showed marked improvement, although Kernig's sign was still present. There was no Babinski and the rigidity of the neck was less marked. He still had some rotary nystagmus to the left on looking to the left, but in less marked degree. Headache was present only about half the time and not so severe as formerly. The mental condition was clear. The patient now kept his eyes open and asked for more food. The same day he received two more intravenous injections, one of optochin and one of 100 c.c. antibody.

The following day, Aug. 19, two injections of 100 c.c. each of antibody were given, and on Aug. 20 one of optochin and one of 50 c.c. of pneumococcic antibody.

The next day no injections were given as it had been determined to give optochin only every other day and the funds for the antibody solution were exhausted, owing to the large amount given and the prohibitive price. Within twenty-four hours there was a marked change for the worse, the patient being quite somnolent, the temperature rising to 99.1° and leucocytes rising from 9000 to

16,000. He received a dose of optochin at 2 p. m. At 8 p. m., spinal puncture again yielded 45 c.c. slightly turbid fluid and as 100c.c. more antibody had been obtained, 40 c.c. was given intraspinally and 60 c.c. intravenously at the same time. This was followed by a drop of temperature to 96° and then a chill, followed by a rise to 102°, with a gradual drop to 99°.

An appeal to H. K. Mulford and Co., in an effort to continue the antibody medication resulted in the donation of an unlimited supply for this case. Accordingly, he was given 100c.c. on Aug. 23.

The following day spinal puncture yielded 25 c.c. almost clear fluid, and 15 c.c. 1/1000 optochin was injected intraspinally. The fluid removed showed 600 cells to the c.m.m. Spinal puncture was not repeated because of the intense pain in the head and neck the last puncture had produced. Intravenous medication was used entirely thereafter, 50 c.c. of pneumococcic antibody being given the same evening.

From Aug. 23 to Sept. 1, 300 c.c. antibody and 30 c.c. optochin solution was administered. Medication was then discontinued as temperature, respiration and pulse were now normal; rigidity was rapidly disappearing, as were also nystagmus and headache, and the patient was feeling very well. The leucocytes fell rapidly, until on Sept. 8 they reached 6750, and the patient was almost ready for discharge. Nystagmus and headache had disappeared entirely. The patient was up and about the ward.

Unfortunately the freedom from headache was of short duration, lasting less than a week, when the patient again began to complain of it at times. There were no other symptoms however. Examination of the eye grounds on Sept. 19, 1923, showed no pathology. The patient continued being up and was permitted to walk to the sun parlor, but headache persisted at intervals. A leucocyte count on Sept. 21 showed 11,500 leucocytes, and on Sept. 27, 12,500. Turning tests were made on Sept. 14, 1923, by Dr. Mulherin. On turning to the right, there was fair nystagmus to the left of 16 seconds duration, vertigo of 30 seconds duration. Past-pointing 12 inches to the right with the right hand and 8 inches to the right with the left hand was fairly persistent. On turning to the left there was very poor horizontal nystagmus to the right of 10 seconds duration, vertigo of 16 seconds duration and past-pointing 8 inches to the left with the right hand and 6 inches to the left with the left hand, but both touched on second trial. The report received was, "This appears to be a peripheral case with destruction of the right labyrinth" (preliminary report).

As the patient seemed to be at a standstill in the hospital, it was determined to let him return home and report for observation to the clinic. Accordingly, he was discharged Sept. 29, 1923.

He returned to the clinic on Oct. 1, completely exhausted from the long trip from his home in Amber, Pa., and with a temperature of 101° , so he was again admitted to the hospital, where he was still a patient. The following day he felt somewhat better. Barany reactions were studied on Oct. 5, 1923. Turning to the right gave nystagmus of only 12 seconds, with vertigo of 14 seconds; and turning to the left nystagmus of 8 seconds, with vertigo of 11 seconds. Douching of the right ear four minutes gave no nystagmus with head forward or backward and no past-pointing with head forward, but two inches past-pointing to the right with the right and left hand with head back. After four minutes douching of the left ear there was no nystagmus or past-pointing with the head forward, but fair horizontal nystagmus to the left with the head back, and two inches past-pointing to the left with both hands. The report on Oct. 8 was that "the cerebellum appears normal at this examination, but there is evidence of increased intracranial pressure. The cerebello-pontile angle is not entirely above suspicion and this case should be examined later with that in view."

The patient's condition appeared to be getting worse slowly. Headache was quite persistent, he was less inclined to talk or to get out of bed, and when out of bed showed a tendency to "wanderlust", the nurses finding him in unlooked for places. The appetite began to fail, also vision. Neurological examination by Dr. Potts on Oct. 19 was entirely negative as to localizing symptoms, either in the cerebellum or cerebrum. Two attempts at spinal puncture on Oct. 25 were unsuccessful. A nose and throat examination on Oct. 26 was negative, also X-ray of sinuses.

Another Barany test gave results as follows: Turning to the right gave 17 seconds horizontal nystagmus to the left of fair excursion and rapid with 6 inches past-pointing with the right hand and 4 inches with the left hand—fairly persistent. On turning to the left there was a very poor horizontal nystagmus to the right of 6 seconds duration, with past-pointing 3 inches to the left with the right hand and touching with the left. On douching the right ear with cold water four minutes there was failure of response of all canals, there being no nystagmus or past-pointing with the head erect or back. On douching the left ear the vertical canal failed to respond, there being no nystagmus or past-pointing with head erect, but the horizontal canals responded with fair horizontal

nystagmus to the right and past-pointing with each hand 4 inches to the left. The report indicated cerebral pressure plus suspicion of the left cerebello-pontile-angle provided other central symptoms were present.

On Nov. 2, a thorough ocular study was made by Dr. D. C. Peter, who submitted the following report:

Vision: 6/12 in each eye. *External ocular* movements good and full in all directions.

Pupillary Phenomena: Pupils react to light, accommodation, convergence and consensual contraction. Pupils are about $3\frac{1}{2}$ m.m.

Fundus Examination: (through dilated pupils) O.D. media clear, disc oval, long axis 90, fairly well defined. Scleral ring well marked. Artery and vein ratio 1 to 2. Arteries inclined to be small, especially the macular twigs. Vessels a trifle tortuous. The deeper layers of the disc are rather pale. O.S. is similar to O.D.

Fields are contracted for form and color, the right eye more than the left. *Interpretation:* There are no localizing symptoms in the eyes. There is a low grade type of consecutive atrophy which is the result of a remote inflammation, the right eye being a little more advanced than the left.

As the patient's condition showed no improvement, the temperature rising to 102° , cysterna puncture was determined upon to eliminate, if possible, internal hydrocephalus as a result of the meningitis. Accordingly, on Nov. 7, 1923, Dr. Grant attempted cysterna puncture, but obtained a dry tap. This was followed by intense headache. The patient continued drowsy, refused food and again had a slight rise in temperature. Now for the first time in a month, he began to show a return of spontaneous rotary nystagmus to the right on looking upward or to the right. He also began to vomit and to refuse practically all food.

As conditions seemed definitely to point toward a fatal termination, cerebellar exploration was determined on as offering the most hope in the absence of any localizing symptoms of reaching the focus of the trouble. This was performed by the writer on Nov. 14, 1923, Drs. Roberts and Curtis assisting. An incision was made beginning about $1\frac{1}{4}$ inches behind and on a line with the right external auditory meatus, outward to the external occipital protuberance. A short arm about $\frac{1}{2}$ inch in length was extended down in the median line and about 1 inch in length at the other extremity of the incision. The muscles and periosteum were pushed downward and an opening made in the bone with a chisel and rongeurs 2 inches posterior to the external auditory meatus and below the

line of the lateral sinus. The opening was enlarged until about 1 inch in diameter. A cross-incision was made in the dura, followed by the escape of considerable clear fluid. The brain did not pulsate. A graduated brain knife was inserted in all directions to a depth of about $1\frac{1}{2}$ inches. This also was followed by a free escape of clear fluid. No pus was discovered, but the brain then began to pulsate freely. The four corners of the incised dura were caught up by a silk suture and then the side arms of the incision reinforced with further sutures. Drainage was introduced into the wounds down to the dural opening and the wound closed with silk sutures.

Following the operation the patient reacted well, had less headache, had no nausea or vomiting and began to eat better. The nystagmus had not disappeared nor lessened greatly. He was vastly more comfortable, probably due to the decompression.

Up to the present there have been no new symptoms since the operation, excepting that within the last week transitory diplopia has developed. The periods during which it is present are apparently getting longer. The intracranial pressure is probably increasing and manifesting itself in a new direction. Leucocyte count is still 12,000. Unfortunately the patient is far from well and probably will not be until some more definite localizing symptoms point to the situation of the pus.

Shortly after reading the above report, the patient improved slightly and was sent home to get the benefit of the country air. The improvement did not last long and soon he was again bedridden. He developed incontinence of urine and feces with bed sores, total apathy, inability to concentrate and hold a conversation, constant headache, weakness of the left side and a condition which resembled encephalitis lethargica for which his local physician was treating him.

He was readmitted to the Polyclinic Hospital in Dr. Robert's service in a lethargic state. He was able to understand what he was told and at times spoke rather indistinctly but lapsed again promptly into the lethargic state. His temperature on admission was 99.4° , pulse 89, respiration 22. Examination revealed some tendency to opisthotonus with lead pipe rigidity of the arms, especially the right, and the right leg. He had a distinct Kernig's sign. The left arm and leg showed definite paresis. The right hand showed marked tremor and some inco-ordination. There was a bed sore in the coccygeal region and he had incontinence of urine and feces. The blood picture was as follows: red blood

cells 3,360,000, white blood cells 10,850, hemoglobin 75 per cent, small lymphocytes 6 per cent, large lymphocytes 3 per cent, polymorphonuclear leucocytes 91 per cent. On Jan. 19, 1924, the polymorphonuclear leucocytes came down to 65 per cent and the large lymphocytes to 35 per cent. Blood culture was negative.

Neurological examination by Dr. John Rhein was as follows:

Pupils equal and respond to light and accommodation sluggishly. The tongue protrudes straight. The left nasolabial fold appears less marked than the right. (Lack of co-operation on the part of the patient prevents study of the condition of the muscles of the face.) The right hand shows marked irregular coarse tremors and is feeble but retains some power. The left arm has little or no power. There is increased resistance in flexion and extension at the elbow. The arm jerks are increased markedly on both sides. Bilateral abdominal and epigastric reflexes are positive. Cremasteric reflex is positive on both sides. There is marked rigidity of both legs. Kernig is positive on both sides. The knee jerks are increased and ankle clonus is present on both sides, readily exhausted on the right, persistent on the left. There is no Babinski, Oppenheim or Chaddock reflexes present. The mental state prevents reliable tests of the state of the muscles. Mental examination—Patient answers single questions but soon tires and becomes negativistic, refusing to answer questions or respond to requests, all of which may be the expression of early exhaustion. Rigidity of the neck during forward movements. Diagnosis—Meningitis.

Eye examination by Dr. Luther C. Peter: Pupils equal. They react to light and there is an attempt at convergence. The patient can look up and down but to the right and left convergence is very limited. The fundus of the right eye shows a blurred disc, the veins are full and tortuous and there is also some tortuosity of the arteries. The retina is a trifle hazy. The findings in the left eye are similar to those of the right eye but no so marked.

Summary. 1. Convergence insufficiency. 2. Conjugate deviation to the right and left defective. 3. Neuroretinitis with some papillitis especially on the right side.

Jan. 19, 1924. Examination of the spinal fluid gave 15 c.c. of clear fluid under no pressure. There were fifteen cells to the cubic centimeter, Wassermann negative, glogulin positive, colloidal gold reaction $2+2+4+4+5+5+2+1+1+1+0$.

The patient's condition continued to remain the same excepting that he continued to grow weaker and broke out in numerous pustules and bed sores. As brain abscess was still suspected Dr. Grant

was requested to examine him which he did on Jan. 24, 1924. His report follows:

Cranial nerves—1st. Not tested; 2nd. Apparently O. K. from eye report; 3rd, 4th and 6th. Cannot move eyes as well to left as to right. Rotary nystagmus on looking to right; 5th. Jaw deviated to left on opening mouth; slight weakness of the left masseter; apparently hyperaesthesia of the left face and cornea; 7th. Weakness of the left face; 8th. Uncertain; suggest more accurate tests; 9th and 10th. Not tested; 11th. Both shoulders weakly moved; 12th. Tongue deviated to the left.

There is more spasticity of the right extremity than the left. All reflexes were much increased equally on the right and the left. There is no Babinski. Ankle clonus present on the left side.

The case seems to me to point to a basilar involvement especially on the left side. If there is loss of hearing of the left ear the angle ought to be involved. With his beginning choked discs and slightly increased intracranial pressure, he is developed an internal hydrocephalus due to his basilar condition. I am uncertain as to type of the lesion but I believe it is probably meningitis. Certainly at the present time the case is not operable. I would suggest repeated use of hypertonic solution by bowel in an attempt to control increasing pressure. I would suggest any possible studies of the auditory and vestibular tracts that can be made.

An attempt to follow the suggestions with reference to the hypertonic solution failed as the patient was unable to retain it. His condition became progressively weaker and on the twenty-ninth his temperature rose to 101.3° but fell the next day to normal. The respiratory rate also rose to forty but fell the next day to normal. On February 1, the temperature rose never to fall again but to remain between 102° and 103° until his death. The pulse rose to 120 and remained there. At no time did his respiratory rate rise above twenty-eight until immediately preceding death. There was no cough but the patient presented the appearance of extreme prostration, took no nourishment and finally died at 9 P. M., Feb. 5, 1924.

A complete autopsy was performed by Dr. Eugene A. Case who reported as follows:

The patient presented external evidences of a long and continued illness, such as extreme emaciation; dry skin; eczema of the scalp; diseased hair follicles with alopecia and thin lusterless hair; and a gangrenous bed sore.

There was a large patch of pneumonia in the upper part of the right lower lobe associated with a fibrinous pleuritis, and several

small patches in the left lower lobe. These with edema represent terminal processes.

Accompanying his primary and terminal infection there was cloudy swelling of both liver and kidneys, though not of as severe a grade as might be expected. The principal pathological findings, were in the brain and spinal cord.

The skull had been opened surgically, in the posterior fossa on the right side, and about this opening the dura was adherent.

Examination of the left ear showed an intact and normal tympanic membrane, ossicles and middle ear, semi-circular canals and cochlea. On the right side there was no tympanic membrane and the cavity of the middle ear was largely filled with spongy bone. In the meshes of this bone a thin pus was found.

Cultures from this pus yielded a diphtheroid, the staphylococcus albus and the colon bacillus.

The Paccionian bodies were numerous especially on the right side. An inspection of the pia mater showed distinct thickening in various situations over the vertex and at the base. This thickening was found microscopically to be due to fibrous proliferation, edema and mononuclear round cell infiltration, and represents the end result of his meningitis.

The vessels of the brain are congested and the convolutions, especially those of the right side are much flattened. The extreme flattening found over the right frontal lobe extends to the Rolandic area and almost down to the temporal lobe. Accompanying this there was an edema of the pia-arachnoid. Palpation of this area revealed a well marked softening and on section an abscess was uncovered. It measured 58x45x45 m.m., contained thick greenish pus and was located 27 m.m., from the anterior extremity of the right cerebral hemisphere. Laterally only 3 m.m. of brain tissue separated the abscess from the subarachnoid space.

The brain was hardened in formaldehyde before sectioning and unfortunately we did not culture the pus until too late. Smears from the pus, however, showed long chains of Gram positive streptococci. Cultures would have enabled us to determine whether these belonged to the haemolytic group or to the green producers.

The right hemisphere bulged well toward the left side destroying the symmetry of the brain and enroaching up on the left hemisphere.

The only gross change found in the spinal cord was a very slight thickening of the pia-arachnoid.

Microscopically the abscess in the frontal lobe is found to have a fibrous wall in which deposits of calcium have occurred. The con-

tents consist of debris and leucocytes and the wall is infiltrated with many mononuclear leucocytes. The large pyramidal cells of this region show degenerative changes.

In the cerebellum there is the same edema and round cell infiltration of the pia and in addition degeneration of the antler cells.

While the gross changes in the cord were insignificant the microscopical ones were well marked and consist of a perivascular mononuclear round cell infiltration, present both in the pia and in the substance of the cord, especially where the pia dips into the cord carrying the vessels with it.

Microscopical examination of the other organs show cloudy swelling in the liver and kidneys, fragmentation of the heart muscle with a loss of the sharpness of the cross striations.

Three important questions may be answered by the autopsy findings. First, what evidence existed of a former meningitis? Second, what cerebral condition was responsible for his later symptoms? Third, what terminal processes accompanied the primary infection?

The condition of the pia of both the brain and cord are unquestionably the result of his former meningitis and there can be but little doubt of the role of the chronic abscess of the brain in the history of the case. The terminal processes have been described.

Several other questions present themselves but unfortunately we cannot answer them satisfactorily as our data does not give us sufficient information. One, did the abscess precede or follow the meningitis? Another, was there any etiological relationship between the meningitis and the abscess? A third, would recovery have followed the evacuation of this most accessible abscess if localization had been possible? These and other questions lead to speculation which is sometimes profitable and sometimes not—I will leave them to your consideration.

Finally, we have in this case another example of the gravity of otitis media. The beginning of all his trouble was this common condition and in his case the mastoid operation was, unfortunately, not ultimately successful.

The writer has reported the above case in detail because of the great rarity with which cases of pneumococcic meningitis recover even sufficiently to develop later complications and because of the method of treatment followed, which is new so far as his knowledge goes, namely, the uses of heroic doses of pneumococci antibody intraspinally and intravenously, alternated with optochin used in the same way. However, it is not intended to give the impression that a way has been found to cure all cases of pneumococcic men-

ingitis, for there were two unusual factors in this case. In the first place, the case was of rather gradual onset and was seen early so that vigorous treatment could be given promptly. The second and more important element was the fact that the strain of pneumococcus present was a non-virulent one, so weak that it grew for two days only, and then died; would not kill a white mouse and could not be transplanted. A similar non-virulent growth was obtained from the blood. However, had it been allowed to grow undeterred, it probably would have acquired virulence and taken the usual course. That the treatment had a specific effect appears to be proven by the fact that in the one day and a half that no injections were given the patient promptly became worse.

Pneumococcic antibody was used instead of antipneumococcic serum because very many more units of antibody are contained within the same bulk, which nevertheless is almost devoid of protein content, so that it does not so readily give rise to antiphylactic reactions. Very large doses were given frequently and only one severe reaction was obtained, this immediately following the administration of 40 c.c. intraspinally and 60 c.c. intravenously at the same time. In all 1168 c.c. of antibody were used, of which 108 c.c. were injected intraspinally; 45 c.c. of 1/1000 optochin solution were injected into the spinal canal and 75 c.c. of 1/2000 optochin solution were injected intravenously.

The optochin treatment was commenced because the drug was at hand and the antibodies were not and continued for whatever value may be inherent in the chemical. It has one marked disadvantage, in that it is very irritating and probably accounted for the dry taps.

In conclusion, the writer wishes to express his gratitude to Dr. Walter Roberts for the privilege of assuming full care of the case and to the numerous consultants and internes who have so earnestly co-operated in an effort to bring it to a happy conclusion.

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LYMPHANGIOMA OF THE LARYNX.*

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Lymphangioma of the larynx is a rare condition, only eight cases having been reported up to the present writing. We wish to report two cases of our own and to consider in addition, the symptomatology and therapy as deduced from a study of these cases.

Angiomata are divided into two classes, hemangiomata and lymphangiomata. Four types of lymphangiomata have been described; the simple, the cavernous, the hypertrophic, and the cystic. Although not rare in occurrence, lymphangiomata are rather uncommon. The most frequent sites are in the tongue and lips (macroglossia and macrocheilia), in the extremities (elephantiasis), in the neck (hygroma colli cysticum), and in the sacral region (sacral hygroma). Up to the present, the simple and the cystic types have not been noted as occurring in the larynx.

The simple type, lymphangioma simplex, is characterized by a new growth of lymphatic vessels having a comparatively narrow lumen and more or less parallel walls.

The cavernous type, lymphangioma cavernosum, is characterized by irregularly shaped, intercommunicating lymph spaces of varying sizes.

In the hypertrophic type, lymphangioma hypertrophicum, the lymphatic vessels are lined with several layers of endothelium with at times a nodular or valvular growth of endothelium into the lumen of the vessels.

The cystic type, lymphangioma cysticum, is characterized by one or more large lymphatic cysts in a new growth of lymph vessels.

There may be present secondary or complicating pathological lesions, such as acute or chronic inflammatory processes, hemorrhage, or pigment depositions. We have seen one case of combined hemangiomatous and lymphangiomatous tumor, a type of growth hitherto unobserved in the larynx. This combination occurs in other sites, such as the tongue. Histologically, cavernous hemangiomatous and cavernous lymphangiomatous areas were found in these cases.

The underlying cause of development of lymphangioma is unknown. A large number of these growths are congenital in origin but there are many which appear only in adult life with no definite evidence of having originated during intrauterine existence. For these, the

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presence of embryonal rests or various growth stimulating influence are invoked to explain the causation.

The first authentic lymphangioma of the larynx was reported by Koschier in 1895. Knight reported a case in 1876. The pathologist stated that an accurate diagnosis was impossible because of the poor preservation of the material submitted, but he stated that the section gave him the impression that the tumor was composed of dilated lymphatics. The only correct clinical diagnosis of this type of tumor was made by Menzel in 1904. We have been able to find reports of six other cases, those of Richardson, Fein, Harmer, Heindl and Prokeffsky (2).

Koschier's case was that of a male 40 years old, complaining of difficulty in swallowing for five months. Koschier found a walnut sized, fluctuating tumor involving the left pyriform sinus to the posterior surface of corniculate cartilage and left aryepiglottic fold, covered with mucosa of slightly redder color than the rest of the region. The growth was removed by the galvanocautery snare. White cloudy fluid escaped. The microscopic diagnosis was cavernous lymphangioma with inflammatory process. The result was satisfactory (tumor smaller and healed soon).

Prokoffsky's Case I: Female, 55 years old, dyspnoeic two to three years; growth involving left false cord. Removed in several sittings, bright clear fluid escaped. Microscopic diagnosis, lymphangioma with inflammatory infiltration of small round cells.

Case II: Male, aged, growth involving anterior end of right vocal cord. Microscopic report small lymphangiomatous growth with edema of interstitial tissue.

Fein's Case: A male, 28 years old, complained of hoarseness, coughing and pressure in throat for some months. Examination revealed a smooth spindle shaped, sessile, soft growth, translucent and yellow, about as thick as a match stick. On removal with forceps, the growth tore off smoothly and easily. Patient was reported as well. Microscopic diagnosis was cavernous lymphangioma with chronic inflammation.

Heindl's Case: A man, 48 years old, complaining of hoarseness for one year. A pale soft growth, pinhead in size, was found on the anterior third of a vocal cord. Growth was removed and the cord healed easily. Microscopic diagnosis, cavernous lymphangioma with chronic inflammation.

Harmer's Case: A girl, 16 years old, complaining of voice change for ten years. The epiglottis and the aryepiglottic folds were involved and concealed the larynx. Removal of a specimen was followed by a rise in temperature and pus formation. The micro-

scopic diagnosis was cavernous lymphangioma with acute inflammation. This case is illustrative of Kuttner's intermittent fever.

Menzel's Case: A male 38 years old, hoarse for two months. Laryngeal examination revealed a polyp on the anterior third of the left vocal cord, which was removed. On the left false cord a hemispherical sessile growth, with normal mucosa and not sharply demarcated, was found. This growth became larger on expiration and smaller on phonation and on coughing. Its consistency became firmer on phonation. It was displaceable on firm pressure. A diag-



Fig. 1. Low magnification. Lymphangioma cavernosum. Numerous endothelial reduplications in the form of valve flaps and villi. Labyrinthine-like lymph channels. Case I.

nosis of lymphangioma was made. The growth was removed by the cold snare. Some clear fluid and a little blood escaped. The microscopic diagnosis was cavernous lymphangioma. Four weeks after the removal of the growth a fistula developed, from which clear fluid escaped. Nine months later a recurrence of the growth took place.

Richardson's Case: A man, 32 years old, complaining of dyspnoea, difficult deglutition and muffled voice for ten years. In addition, difficulty in respiration was present on deglutition. A growth from the right false cord completely filled the larynx. It was gray blue, soft, smooth and round. The growth was removed by the cold snare; syrupy fluid escaped. The specimen was 5x3x2½ cm. The microscopic diagnosis was cavernous lymphangioma with pigment deposition (not melanin) and bloody extravasation.

We have seen two cases of lymphangioma of the larynx. The first was a man 38 years old, seen in September, 1917, who complained of hoarseness of six weeks' duration. The hoarseness appeared after a cold. At times he became aphonic. His past history was negative except for an attack of hoarseness lasting one day, six months before examination. At the junction of the anterior and middle third of the right vocal cord a pedunculated, deep red mass was seen. This was about 4 mm. in diameter. His septum was deviated to the right with a spur on the left side, and his pharynx was congested. Under local anesthesia and indirect laryngoscopy, the growth was removed with a cutting forceps. He made an uneventful recovery. Seven years later his larynx was found to be normal in appearance, his voice clear, and the patient free from



Fig. 2.

Fig. 2. Medium magnification of area in Fig. 1, showing endothelial duplications and syncytia in lymphatic channels. Moderate serous infiltrations of stroma. Case I.

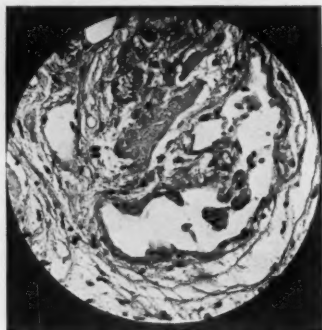


Fig. 3.

Fig. 3. High magnification of area in Fig. 1, showing endothelial villus in lymphatic channel of small size. The endothelial lining is flat (moderate edema of stroma). Case I.

any subjective symptoms. The microscopic diagnosis was cavernous lymphangioma with hypertrophic endothelium and valve-like formations.

The second patient was a man 35 years of age, referred by Dr. David Kaliski of the genito-urinary clinic, Mt. Sinai Hospital, Out Patient Department, in November, 1922, for examination of the larynx because of hoarseness. The patient had lues and paroxysmal hemoglobinuria. He had been hoarse for thirteen years; four or five times a year during this period he expectorated blood. His hoarseness gradually increased. At times he coughed a great deal. On examination of the larynx a pinkish, pedunculated mass about 3x4 mm. was seen on the middle of the left vocal cord. The surface of this mass was traversed by three or four dilated vessels. The

growth itself was translucent. On phonation the growth became erect and firmer. On the right and left vocal cord, anterior to the growth were translucent grayish masses. The tumor on the middle of the left vocal cord was removed with a Krause forceps under indirect laryngoscopy (local anesthesia). There was very little reaction when the patient was seen a week later. Unfortunately, this patient disappeared from further observation. The microscopic diagnosis was cavernous cystic lymphangioma with hypertrophic endothelium.

We are including here the case of combined hemangiomatous and lymphangiomatous growth: A female, 21 years old, treated at the Mt. Sinai Hospital Out Patient Department, fourteen years ago. No history is obtainable except that a growth was present on the left vocal cord. This growth was removed by indirect laryngoscopy. Examination of the section revealed a cavernous hemangioma and lymphangioma.

Eight of the ten known cases occurred in males, the other two were in females. The ages of the patients in the majority of the cases were between thirty and fifty years. The youngest patient was 16 years old at the time of diagnosis, with a history of ten years' duration. The oldest was 55 years old. One of our patients has lues and paroxysmal hemoglobinuria; the other ascribed his illness to a "cold". No mention of associated or predisposing diseases is made in the reports of any of the other cases.

Of the eight cases in the literature, six were cavernous lymphangioma. The classification of the two remaining cases was not stated. Both our cases were of the cavernous type. Histological study showed, in all of the cases reported, cavities of irregular size and shape, lined by a single layer of endothelium. The amount of stroma varied; in most of the sections it was slight. There was a round cell infiltration in all except one. In some the presence of fibroblasts was noted. The lymph spaces contained a pink staining homogeneous matrix in which was embedded fibrillar and granular material and an occasional lymphocyte. Both our cases showed in addition to these features, areas of hypertrophic and hyperplastic endothelium. In places, this hyperplastic endothelium projected into the lumen in the form of villous masses, practically filling the entire cavity. In other areas a valve-like formation of endothelium was noted.

One of our cases showed a central cavity which occupied the greater part of the growth. Around this space were grouped smaller ones. Underneath the laryngeal mucosal covering of the growth were sections of several dilated blood vessels, described under the

laryngeal examination of case II. The associated pathological lesions were edema, acute inflammation, extravasation of blood and deposits of pigment (not melanin) in the stroma.

The symptoms are variable, depending in good part on the location and the size of the tumor. In some cases no symptoms were present until the tumor reached a comparatively large size; in others, vocal cord lesions, attention was directed to the larynx while the tumor was small, one to three millimeters in diameter. Voice changes such as hoarseness, aphonia, muffled or "altered" voice predominated.

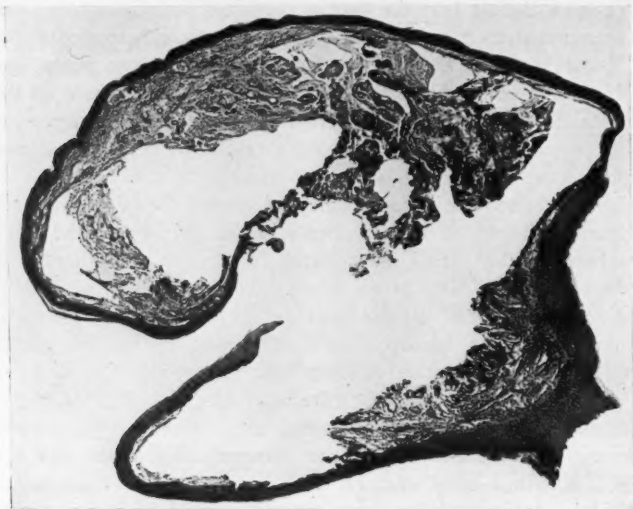


Fig. 4. Low magnification. Lymphangioma cavernosum. Large cystic space containing fibrin network to the left. Above there are numerous lymph channels of varying sizes and shapes. To the right and above is another large cystic space containing villous projections shown in detail in the two next micro-photographs. The lower right hand cavity is an artefact. Case II.

They were present in eight out of the ten cases. Dyspnoea, impairment of respiration, cough, bloody expectoration, pressure in the throat and difficult deglutition were occasionally present.

The duration of symptoms varied from six weeks to thirteen years; in five cases the symptoms were present for less than six months. The tumors were situated on the anterior or middle portion of the vocal cords in five cases; on the false cords in three; in the pyriform sinus in one; on the epiglottis and aryepiglottic fold in one. In four cases the growths were small (pinhead size to 4 mm.). The others were described as large, walnut size, "fills larynx" and "conceals larynx". Three were described as reddish or pink in color, one

gray-blue, the others pale. Two were pedunculated, and four were sessile. The methods of attachment in the remaining four were not mentioned.

Fluctuation was noted in one case; in one, displacement to touch was marked. In two cases, variations in size during phonation and respiration were noted. On phonation the growth became erect, smaller and firmer; during quiet respiration they became flabbier and larger. This symptom was first noted by Menzel. As we shall point out in another paper, this symptom is also found in hemangiomas of the larynx. In one case, intermittent fever associated with local acute inflammation was present. This is the only laryngeal case presenting the syndrome of Kuttner (intermittent fever of

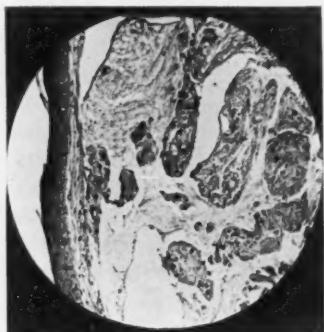


Fig. 5.

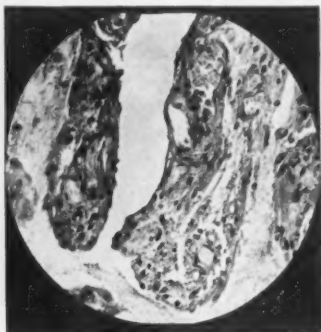


Fig. 6.

Fig. 5. Medium magnification showing the lymph spaces containing coagulated lymph and several epithelial reduplications projecting into the lumen of the lymphatics. Case II.

Fig. 6. High magnification, showing a lymph space containing clotted lymph. There are two projecting masses of tissue in the lumen of this space. They are lined by flat endothelium and contain several small lymphatic vessels and an occasional blood vessel. Case II.

lymphangioma). It has been observed in several cases of lymphangioma, notably macroglossia and elephantiasis, that the lesion is subject to intermittent acute inflammatory attacks associated with fever and other constitutional symptoms. These attacks last for variable periods, generally several days. They appear at irregular intervals which may be several months in duration. The tumor becomes red, swollen, painful and tender, and it may be covered with exudate. Microscopic examination of the tissue during an attack shows an acute inflammatory reaction (edema, congestion and polymorphonuclear leucocytic infiltration). Whether this reaction is due to direct infection by penetration of the surface by pathogenic bacteria or whether a systemic infection localizes in the lymph-

angioma has not been decided. The whole picture resembles in many ways acute joint or serous cavity involvement.

One may justifiably suspect the presence of a lymphangioma of the larynx when a pale, translucent tumor apparently cystic or fluid containing, exhibits variations in size and consistency on phonation and quiet respiration. If present, the intermittent fever of Kuttner would be a further confirmatory symptom. Bloody expectoration, reddish color or dilated superficial veins do not rule out definitely the presence of lymphangioma, as we found out in one of our cases (case II). Although variations in size and consistency on phonation and respiration were noted in this case, the history of bloody expectoration and the presence of dilated veins on the surface of the

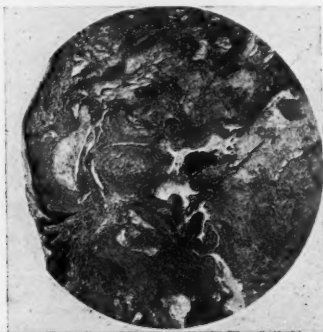


Fig. 7. Medium magnification. Combined hemangioma cavernosum and lymphangioma cavernosum. There is marked hyalinization around the blood spaces. The hemangiomatous element predominates over the lymphangiomatous portion. There is a moderate amount of round cell infiltration and fibrosis in some areas.

growth, apparently cystic, caused us to rule out a pre-operative diagnosis of lymphangioma in favor of a cyst with marked vascularization of its walls. As stated above, variations in size and consistency on phonation and respiration are present in hemangioma of the larynx but these growths are generally lobulated and deep red in color. In differentiating growths of large size, aspiration has been recommended as a helpful diagnostic procedure. The presence of blood in the aspiratory syringe would support a diagnosis of hemangioma whereas the appearance of clear fluid would indicate a lymphangioma. But, it is conceivable that in a large lymphangioma well supplied with blood vessels, or with hemorrhage into its interior, that blood might be aspirated and so confuse the diagnosis. Furthermore, there are the dangers of continued hemorrhage in a hemangioma and of infection in a lymphangioma. Cysts and edematous fibromata do not present the variations in consistency and size on respiration

and phonation that are observed in lymphangiomata. There is very little likelihood of confusing this type of growth with a malignant neoplasm or with syphilitic or tuberculous granulomata.

Three patients were reported as healed. One of our patients has been observed over a period of seven years with no recurrence of the growth and entire absence of symptoms referable to the larynx. One patient (Menzel's) had a persistent sinus leading into the larynx from a cavity in the laryngeal wall and nine months after operation a recurrence of the growth appeared. In one case, removal of a specimen for diagnosis was followed by an acute inflammatory process. This unforeseen mishap led the operator to champion the use of the galvanocautery in the removal of specimens from suspected ways of infection into the tumor.

In two cases the growths were removed with the cold snare, in one with the galvanocautery snare. In our two cases the tumors were removed with cutting forceps by indirect laryngoscopy. The five other cases were operated on by indirect laryngoscopy; the instrument used in affecting removal was not designated in any of these cases. One patient (Menzel's) had a recurrence of the growth after removal with the cold snare. It seems essential to us to remove the entire growth in order to avoid recurrence, a persistent fistula or an acute inflammatory process. The choice of procedure, therefore, should be determined by the size of the tumor and its method of attachment. If the growth be small and pedunculated, as in our cases, indirect laryngoscopy and the use of cutting forceps would appeal to us as the method of choice in its removal. If it be large and sessile, suspension laryngoscopy and sharp dissection would be our method of procedure rather than external operative procedures, such as laryngofissure.

SUMMARY.

We have observed two cases of lymphangioma of the larynx. In addition we have noted one case of hemangioma and lymphangioma combined. Laryngeal examination revealed a definite sign of benign neoplasms of vascular origin namely the "phonation sign", observed in both hemangiomata and lymphangiomata.

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780 Park Avenue.

A CASE OF CHRONIC SUPPURATIVE FRONTAL SINUSITIS.

DR. NATHAN P. LOBSENZ, Paterson, N. J.

Complicated by hernia cerebri into the frontal sinus. Radical external operation with recovery.

Patient, E. M., female, white, presented herself Sept., 1918, complaining of severe frontal headache, particularly over the left frontal sinus. A swelling would appear about $\frac{1}{2}$ inch above the internal canthus, break and discharge pus. There was no discharge of pus from the nose and no particular inconvenience in breathing.

Examination: Swelling size of a small bean 6 m.m. above the inner canthus and in line with the same. It was red, warm to the touch, with rigid walls but soft fluctuating center. On pressure greenish pus exuded. A probe was inserted into the abscess opening and an ethmoid cell explored.

Rhinological Examination: Left side: Middle turbinate apparently normal, no pus visible on shrinking between the middle turbinate and septum or in the middle meatus. Characteristic juxtaposition between septum and agernasi absent.

Right side: Negative.

Rhino-pharynx: Wall atrophic, glossy and dry, with some viscid secretion on the surface. No pus was visible coming from either cloanae.

X-ray: Lateral view negative. Frontal sinuses appeared large and clear, due possibly to over-exposure.

Antero-posterior view: Right frontal large and clear. Roentgenologist thought the left frontal sinus either small or full of pus and granulation tissue. Ethmoid cells on the left side appear wider than the right side, with a possible collection of pus in the cells at the base of the frontal sinus.

At about this time, the writer left for the U. S. army.

Aug., 1921, patient again sought the writer, complaining of the same trouble, namely, intermitten formation of an abscess above the inner canthus, severe frontal headache. She had been operated on by a colleague six months previously by the external route.

The objective rhinological findings were the same as found on the first examination in 1918. The X-ray findings did not change; nothing new was noted.

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In view of the fact that she had been operated on previously by the external route; in view of the apparent large size of the frontal sinus, with a possible hypertrophic pyogenic membrane lining same, which could not be reached by any internal procedure; in view of the intermittent formation of an abscess at the base of the sinus over an extended time, suggesting bone necrosis; also in view of the advantages that might be derived by direct inspection of the sinus wall and the relative safety of the external operation, the radical Killian operation was decided on, to be modified as the case indicated.

Wassermann was negative. Spinal fluid and blood not examined. Urine, negative. Temperature, 100-101.5°. Pulse, 90-100.

Anesthesia: Morphine gr. $\frac{1}{4}$, one hour before operation. *Nose:* was packed between the middle turbinate and the outer wall, also between the middle turbinate and septum, with cocaine 20 per cent, adrenalin hcl. 1-1000 gtt xxx - to $\frac{3}{4}$ 1 cocaine sol.

The skin and subcutaneous tissue was infiltrated with novocain $\frac{1}{2}$ per cent adrenalin gtt xx - $\frac{3}{4}$ 1, along the line of the proposed incision, under the proposed forehead flap and along the roof and inner wall of the orbit.

The middle turbinate (left side) was first removed in the usual way. Incision was next made starting at a point $\frac{1}{4}$ inch above the center of a line drawn between the center of the nose and the inner canthus and extending in a curved direction into the eyebrow about to its center. The upper flap, including the periosteum, was elevated. An exploratory opening was made into the left frontal sinus in the usual location to determine (1) size of the sinus, (2) pathology, (3) nature of the previous operation, of which we had no details.

On entering with the chisel, green pus oozed out and the sinus found full of granulation tissue. Approximate measurements: (1) Height $1\frac{1}{4}$ inch, (2) outward-over the orbit past the midline, (3) depth at base $\frac{1}{2}$ inch at the infundibular opening, over the orbit $\frac{3}{4}$ inch.

The floor, or orbital wall, was found to have been removed at the previous operation.

The incision was now extended to the lower border of the lachrymal groove and over the eyebrow to the estimated extent of the sinus. The upper flap was elevated enough to sufficiently expose the sinus; the lower flap reflected to the margin of the orbit. Tissue over the nasal bone and ascending process of the superior maxilla was next elevated, the lachrymal sac elevated from its bed and the periosteum lining, the upper inner and roof of the orbit stripped

off. It was found that the trochlear tendon had been detached at the previous operation and the floor of the sinus absent.

The anterior wall of the frontal sinus was next removed to the extreme limits upward and outward, preserving $\frac{1}{2}$ inch bridge to retain the configuration of the forehead. Considerable granulation tissue filled the sinus. One particular part of this tissue was very prominent, the sensation in probing a little different than the rest of the tissue. As the posterior plate seemed to recede around this projection, we proceeded very cautiously to remove the granulation tissue with a curette from without inward, working towards this particular projection.

After a time, we discovered that there was a clean, round opening in the posterior plate, $\frac{3}{4}$ inch in diameter, with good, hard, white bone forming its margin. The projection through this opening was a part of the frontal lobe, with apparently no dura, arachnoid or pial covering. It was firmly adherent to the bony margin. We covered this with a wet sponge and continued the operation.

The anterior superior nasal spine was next removed after the method of Lathrope and the overlying bone taken away carefully with rongeur and chisel. In breaking down the anterior superior nasal spine the other sinus was opened and explored. Although large, it was found normal.

The nasal bone and ascending process of the superior medulla was removed down to the inferior lachrymal crest, this made continuous with the opening above. The bone lining the lachrymal bone was removed to its posterior ledge. The underlying mucosa was cut through and some anterior ethmoidal cells encountered. These were broken down and found full of green pus.

Gauze was passed from above down into the nose. It was passed to and fro to remove particles of bone and mucous membrane. Iodoform gauze, $\frac{1}{4}$ inch pleated, was packed loosely in the sinus with one end through the nose. Wound was closed with interrupted silkworm gut sutures.

Temperature first day following operation was 101° , which dropped to 99° on the third day.

The gauze was removed in 72 hours and the external sutures in six days.

Results: No discharge to date of writing from the nose or externally.

Headache, now occasional and slight; does not seem to have any connection with the sinus. Patient was given rest glasses for accommodative relief, for she does close work.

LOBSENZ: FRONTAL SINUSITIS.

External discharge absent. No further formation of an abscess with discharge of pus above the inner canthus.

Cosmetic result, eyebrow incision hardly visible. Fine, discernible line at the root of the nose.

Forehead configuration good. Hardly discernible sinking in of tissue, thanks to the bridge formed during the operation.

Eyes, no squint either apparent or latent in spite of complete trochlear detachment.

Ultimate prognosis: In spite of the hernia cerebri, nothing abnormal can be found at present on neurological examination. Her mentality has not changed; her work is of a nature not entailing great mental effort. It seems to the writer that the process was well walled off by nature before the operation and the probability of giving trouble, now that the area of exposed brain is free from pus, is small.

In all probability the opening in the posterior plate was made by an instrument during the previous operation.

294 Broadway.

OCCIPITAL ABSCESS IN MASTOID DISEASE.*

DR. HENRY DINTENFASS, Philadelphia.

Although the literature is very sparse on the subject, occipital abscess, or more properly speaking, necrosis of the occipital bone with fistula formation does occur in mastoid disease.

It is generally recognized that there are many avenues of escape for the products of inflammation of mastoid affections.

Years ago Bezold pointed out that as a result of mastoid supuration, the tip of the mastoid might be perforated and pus gravitate into the soft tissues of the neck. This really is a fact in nearly 20 per cent of all mastoid cases.

In 1888 Hartman described another type, wherein the pus penetrates outward, through the zygomatic root and rupture takes place, appearing as a swelling in the region of the parotid gland, often mistaken for mumps.

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Then, again, necrosis may occur through the inner wall of the mastoid, sometimes with complete abatement of mastoid symptoms, producing intracranial complications.

In rare instances the pus may burrow between the membranous canal wall and the posterior bony meatal wall, causing symptoms resembling a furuncle.

Ruttin describes a type in which the disease spreads inside through and around the jugular fossa, producing a peribulbar abscess and swelling is seen over the back of the neck.

Luc demonstrated that a dehiscence or nonunion sometimes exists at the squamo-mastoidal suture with direct continuity to the middle ear. This easily gives rise to post-auricular swelling without either a perforation or any symptoms from the middle ear. This kind of case appears usually in infants and gives the clinical symptoms of primary mastoiditis.

The most frequent and common site of perforation and tumor formation is, externally, a little below and behind the position of the antrum.

The variety of mastoid conditions herein mentioned are all types in which the necrosis is practically completely confined to the temporal bone. Wm. M. Dunning was the first to show, however, that other cranial bones may be involved from mastoid infection. He states that the cells of the mastoid process are occasionally contiguous with the diploic structures of adjacent bones, even through the sutures. He demonstrates a specimen showing a continuation of the mastoid cells with the basilar process of the occipital bone. (See Fig. 1.)

The case that I am presenting is just such a type. The infection started of course in the middle ear, then extended into the cells of the mastoid process and then by contiguity spread into and involved the cells of the occipital bone, where it broke through with fistula formation, and finally made its appearance as a tumor in the occipital region about an inch and a half posterior to the mastoid process. This kind of mastoid can only occur in types in which the pneumatic element of bone predominates, where the cells are large and numerous and the cortex is comparatively thin, in contradistinction to the hard, sclerotic, non-cellular variety.

The history of the case is as follows:

Mrs. Celia T., white, age 35, and pregnant; presented herself to the surgical dispensary of the Polyclinic Hospital complaining of a headache and a 'lump in the back of her head', as she expressed it. She was directed to the surgical side because there were no symptoms referable to the ear. An incision was made in the swell-

ing, revealing a purulent discharge, and a drain inserted. After the wound was dressed for several days with no improvement, an X-ray was ordered of the left side of the head, including the mastoid. Since the report showed that there was cloudiness of the mastoid cells with questionable breaking down of cell-walls, she was immediately transferred to the otological service of Dr. Walter Roberts, where I had the privilege of taking care of her.

In going over her history carefully, it was noted that the patient complained of some stuffiness of the left ear, with a slight discharge, which had cleared up about six weeks before she applied for treatment at the hospital. Her headache was worse at night,

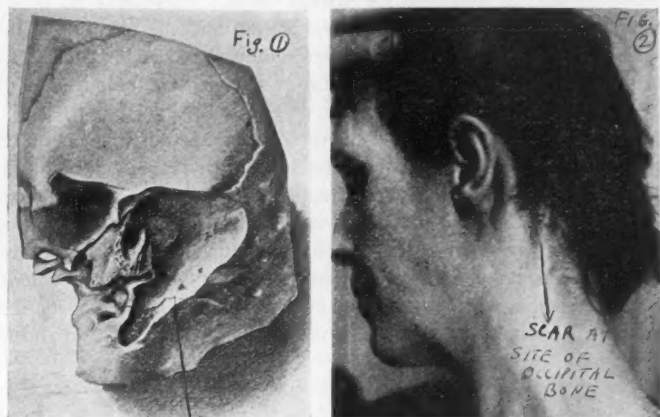


Fig. 1. This specimen shows a continuation of the mastoid cells into the basilar process of the occipital bone. (From Dr. William M. Dunning's collection.) This picture taken from Phillip's Diseases of the Ear, Nose and Throat.

Fig. 2. Shows the position of the healed depressed scar at the site of the basilar process of the occipital bone, the result of extensive necrosis in that region, following mastoid infection.

always of a dull boring character. Her general physical condition was wretched. She was markedly emaciated. She had a nasty hacking cough, with profuse expectoration. Her pulse was rapid and while she did not run much temperature, she gave one the impression of a septic process similar to that of tuberculosis. The sputum however was negative. The Wassermann was negative. The blood picture showed a moderate leucocytosis and a differential count of 70 per cent of polymorphonuclears. Examination of the ear disclosed no evidences of inflammation of the drumhead and no sagging of the posterior wall. There was the sinus present some distance back of the mastoid process, exuding a thick, creamy dis-

charge. There was no swelling, tenderness or pain over the mastoid, but because of the X-ray and the increasing sepsis, we decided to operate.

Operation, Aug. 2, 1923. Due to the fact that she was seven months pregnant and also because of the cough, I resorted to local anesthesia. Novocain, 1 per cent, with adrenal solution (1-1000), 4 drops to the ounce, was used, preceded by a hypodermic injection of morphin sulphate gr. $\frac{1}{4}$ atropin sulphate gr. $\frac{1}{150}$.

When the mastoid cortex was uncapped, I was surprised to see the extent of the involvement with so little mastoid symptoms. There was much cell destruction. The dura over the middle fossa was exposed, as was also the lateral sinus. There was no direct communication between the mastoid wound and the opening in the occipital region. Curetting the latter, however, disclosed necrosis in the occipital bone, which was also quite extensive. Both wounds were packed with iodoform gauze.

Considering her enfeebled condition she withstood the operation quite well and returned to her bed in fair shape. Bacteriological findings from the mastoid were staphylococcus aureus and a mixed streptococcus. After a protracted convalescence, during which time I was forced to enlarge the occipital opening, she was discharged from the hospital. Some weeks later, despite the incessant cough, her weakened condition, and the shock of having the temporal and occipital bones curetted, she gave birth to her baby at term. (Fig. 2.)

The case was exceedingly interesting and instructive to me. It showed the importance of complete history taking and careful X-ray studies. It revealed the rare condition that the occipital bone may be attacked in inflammation of the mastoid. It demonstrated that tumor formation as far back as the occipital region, with no symptoms referable to the ear, but with signs of sepsis must always be regarded with suspicion as having its origin in the mastoid unless proven otherwise.

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1714 Pine Street.

THE USE OF GENTIAN AND ACRIVIOLET IN INFECTIONS OF THE UPPER RESPIRATORY TRACT AND EAR.

DR. JOSEPH H. ABRAHAM, New York.

In October, 1921, I had the pleasure of discussing with Dr. Churchman, the value of gentian violet in the treatment of infections, and suggested that a trial of the dye in the treatment of infections of the upper respiratory tract be tried.

Thereafter, I began my experiments with gentian violet and it now affords me great pleasure to present to you my findings. Since the publication in which Churchman showed that a mixture of dyes was superior to a single dye, I have used the mixture suggested in that publication and now known as acriviolet.

A. FURUNCULOSIS OF THE AURICLE, ALINASI AND SKIN.

In the treatment of furunculosis in which the infection is situated chiefly at the roots of the hair, the technic employed is to pull the hair, then on a cotton tip applicator, a 1/250 aqueous solution is pencilled on the skin completely covering the area involved, and allowed to dry. This is followed by a second application. The dye should be applied twice daily by the patient. At the end of the second or third day, the furunculosis usually is cured.

In cases where induration and infection have extended deeper, the lesion is incised and a light packing of gauze saturated in a 1/250 solution, is packed into the wound and kept moist. I treated several cases, with the usual bacteriological findings of staphylococcus aureus and albus.

For furuncles on the face and neck, if the dye is applied early, they will usually disappear after the end of the second day.

Herpes—lips, etc. Simply apply the dye locally, the same as in furunculosis.

B. SEPTAL ABSCESS.

In this case, the patient presented himself with a hematoma of the cartilaginous septum, due to traumatism by being struck with a tennis racket on the nose. The patient contracted grippe and on examination, it was noted his inability to breathe through either side of the nasal cavity owing to the large globular swelling. This was incised and about 2 c.c. of a very thick, greenish, purulent secretion was removed. The sac was curetted and the cavity was pen-

cilled with a 1/250 solution of acriviolet and then packed with gauze saturated in the solution and changed daily. The report of the culture taken at the time of the operation is as follows:

"Material quite copiously infected with staphylococcus aureus and streptococcus hemolyticus." This culture was taken on January 18, 1924. Two days later, the culture taken within the sac was reported "sterile". The patient made an uninterrupted recovery and was discharged cured.

INFECTIONS OF THE ACCESSORY NASAL SINUSES.

A. In treating the infections of the accessory nasal sinuses, it is absolutely necessary that the entire cavity should be sprayed with the dye so that the dye may come in contact with all of the infected membrane. Therefore, in the acute cases, the results have been most brilliant in the treatment of acute infections of the antrum, provided the other sinuses were not involved. Usually at the end of the third day, it is impossible to grow any bacteria in the secretions, which are returned stained purplish by the dye, and usually from three to eight injections are sufficient. In cases complicated by infections of other sinuses, in which there is a possibility of the pus draining into the antrum and re-infection taking place, it becomes necessary, in order to obtain the same results with the dye, to inject into the diseased sinuses. Following the dye treatment, a catarrhal secretion remains that requires astringent treatment.

The technic employed in treatment of the antrum consists of puncturing the antrum through the inferior meatus with an antrum needle, washing the cavity out with sterile water, and then injecting about 5 c.c. of a 1/250 solution of acriviolet. This is allowed to remain two days when the same treatment is repeated. In any number of cases so treated, the bacteriological findings were of such a variety that it is impossible to say that we had any individual case due to one specific germ, and on examination, the following bacteria were found: staphylococcus aureus, staphylococcus albus, streptococcus viridans, streptococcus hemolyticus, streptococcus mucosa, pneumococci, micrococcus catarrhalis.

I have been using the dye in the treatment of sinuses for the last three years and must admit its value, not alone in acute, but in chronic cases which were compelled to go to operative procedure. In these cases, the dye is also syringed within the cavity similar to above, as the following case will demonstrate:

Mrs. A., aged 64, consulted me on November 23, 1923, after suffering three nights of excruciating pain, due to an acute infection

of her right ethmoids and antrum, on top of a chronic empyema of the antrum, due to a necrosis of the floor of the antrum from abscesses involving the last and the first upper molar teeth. The odor from this antrum was of a very foul character, and as the patient would not consent to the removal of her teeth, the acriviolet was injected on the second day, (as she desired a consultation after the first visit, and the patient was seen by Dr. MacKenty, who agreed entirely with my findings and advice, which was to have both teeth extracted and the antrum operated on radically). The patient did not consent to an operation until January 16, 1924. The antrum was then found filled with pus and polypi. A considerable amount of osteomyelitis of the floor of the antrum was also found, especially over these teeth; this was curretted. The alveolus was cut down sufficiently so that the entire bone surface was covered with a flap of mucous membrane and periosteum and sutured. A counter opening, for drainage, was made through the inferior meatus of the nose. The cavity was filled with the dye. The wound in the mouth healed by primary union and no pus was found in the antrum after the third application of the dye.

In all surgical procedure within the nasal cavity requiring packing, especially in the sub-mucous resections, gauze saturated in the dye is used as a dressing instead of plain gauze. In ethmoidectomy and sphenoidectomy, I find the dye of great value in preventing supuration or extension of the infection by pencilling the whole surface with a 1/250 solution, and if packing is necessary, to use gauze saturated in a 1/250 solution of acriviolet instead of a plain packing.

INFECTIONS OF THE EXTERNAL EAR.

I have used the dye in the treatment of moist and dry eczema of the external auditory canal with excellent results. The surface is pencilled with the dye and allowed to dry, and repeated daily. A few applications are sufficient.

INFECTIONS OF THE MIDDLE EAR.

In the treatment of acute otitis media suppurative after incision, a wick of gauze, saturated in 1/250 acriviolet is put into the external auditory canal as far as the tympanic membrane and the auricle is covered with a dressing of cotton to absorb the drainage and is held in place by a two-inch bandage. On the following day, all dressings are removed and the canal douched with plain sterile water. The patient is then placed in a recumbent position with the diseased ear upwards. A few drops of a 1/250 solution of acriviolet is put into the canal, the tragus is massaged and the auricle pulled upwards and at the same time, the patient is directed to open and close the

mouth in order to allow the dye to gravitate into the middle ear so as to come in direct contact with the diseased mucous membrane. The number of douchings and applications of dye is regulated according to the amount of discharge, varying from two to four a day. As a whole, the treatment has been extremely satisfactory. The ordinary bacteria that we find in these diseases were present.

CHRONIC SUPPURATION OF THE MIDDLE EAR.

I have used the dye in several cases of chronic suppuration of the middle ear, of several years' duration with large perforations of the tympanic membrane, and the technic employed is as follows:

Through an attic canula, the attic was syringed with warm sterile water, followed by an injection of a 1/250 solution acriviolet once a day. In about four cases that I have tried it on, this treatment was continued with a cure after about three weeks.

MASTOID.

I have used the dye in five cases of mastoid, operated on by me, in which the following technic was employed: The wound was packed with gauze, saturated in a 1/250 solution of acriviolet. Then the gauze was placed over the external wound, including the sutures and it is remarkable that after the first or second dressing, the secretions within the wound were sterile, and there was no inflammatory reaction around the wound or in the neighborhood of the sutures.

INFECTIONS OF THE THROAT.

Technic: In acute inflammation of the tonsils, the surface of the membrane is cleansed with an alkaline solution and then a solution of cocain is sprayed upon the membrane followed by suction with a Hurd's Tonsil Suction Tube, in order to remove the cheesy masses, as well as the pus from within the crypts, and then the tonsils are sprayed with a 1/250 solution of acriviolet. A sufficient amount is sprayed on the membrane so that the patient can gargle, allowing him to keep the solution in contact for at least two minutes. The patient is then directed to spray the dye on every three hours and gargle. In any number of cases in which cultures were taken, and streptococcus hemolyticus infection was found on the tonsils, pharynx and larynx, relief was marked after the first day, and in a few days the patient was discharged, cured. The dye seems to have a most specific action in these infections of the tonsils. In two severe cases of streptococcus infection of the tonsils, with marked infiltration of the post-pharyngeal wall, the edematous infiltrated mass was incised and the wound packed with gauze saturated in a 1/250 solution of acriviolet. These cases made quite a quick and uninterrupted recovery. In a few cases where the infection involved chiefly the

trachea mucous membrane, inter-tracheal injections of cocain were first employed and this was followed by injections of a 1/250 solution of acriviolet. The patient is instructed to spray the solution into his larynx every three hours and directed to protrude his tongue and carry the atomizer back into the mouth just above the larynx with the tip of the atomizer directed downward, and while spraying, breathe in slowly but deeply so that the solution will enter the trachea.

In a number of cases of children where streptococcus hemolyticus infections were found, with marked glandular involvement, high temperature and reddened and swollen mucous membrane of the pharynx and larynx, the dye was used freely either by spray or direct application, (preferably spraying because in local applications, we are liable to denude the membrane, causing an ulceration, which under the dye treatment appears yellow). It is an advantage to the child if he swallows some of the dye. Usually in two days, the glandular swelling is markedly decreased and the temperature lowered. At the end of the third to fourth day, the patient is usually free of infection. In some cases, when complicated with streptococcus infection of the nasal cavities, a 1/250 solution of the dye is either dropped or sprayed into the nasal cavities, two or three times a day. Following the tonsil and adenoid operation, the surface of the wound is covered with the dye.

VINCENT'S ANGINA.

Four cases of Vincent's Angina, with positive microscopic findings, chiefly involving the tonsils, were treated with the dye.

Technic: After thoroughly cleansing and removing all necrotic tissue, a 1/200 solution of acriviolet was applied to the ulceration and in two cases involving the tonsils, gauze, saturated in the solution, was packed into the ulcerated area. The patient is directed to spray or drop the solution on the ulcer, four times a day. At the end of the third day, no fusiform bacilli or spirilla could be found in smears taken from these cases.

BACTERIOLOGICAL ANALYSIS OF CULTURES TAKEN BEFORE AND AFTER TREATMENT. 1921-1924. DR. MORTON C. KAHN.

NASAL SINUSES.

| | | |
|---|--|----|
| a | Cultures showing a predominance of streptococcus hemolyticus | 18 |
| | Predominating type lacking after first application | 6 |
| | Predominating type lacking after second application | 6 |
| | Predominating type lacking after third application | 4 |
| | Predominating type seemingly not reduced | 2 |
| b | Cultures showing a predominance of streptococcus viridans | 11 |
| | Predominating type lacking after first application of dye | 4 |
| | Predominating type lacking after second application of dye | 1 |
| | Predominating type lacking after third application of dye | 4 |
| | Predominating type seemingly not reduced | 2 |

| | | |
|---|--|---|
| c | Cultures showing a predominance of staphylococcus aureus | 6 |
| | Predominating type lacking after first application of dye | 4 |
| | Predominating type lacking after second application of dye | 2 |
| d | Cultures showing a predominance of streptococcus mucosus | 3 |
| | Predominating type lacking after first application of dye | 0 |
| | Predominating type lacking after second application of dye | 2 |
| | Predominating type seemingly not affected | 1 |

TONSILS AND SEPTIC SORE THROAT.

| | | |
|--|--|----|
| a | Cultures showing a predominance of streptococcus hemolyticus | 17 |
| | Predominating type lacking after first application of dye | 9 |
| | Predominating type lacking after second application of dye | 4 |
| | Predominating type lacking after third application of dye | 1 |
| | Predominating type not affected | 3 |
| b | Cultures showing a predominance of streptococcus viridans | 13 |
| | Predominating type lacking after first application of dye | 6 |
| | Predominating type lacking after second application of dye | 3 |
| | Predominating type reduced but not lacking | 4 |
| c | Cultures showing a predominance of staphylococcus aureus | 7 |
| | Predominating type lacking after first application of dye | 2 |
| | Predominating type lacking after second application of dye | 2 |
| Records not complete on remainder of tonsil cases. | | |

VINCENT'S ANGINA.

Smears examined on four cases of the above named malady before application of the dye showed the usual picture of fusiform bacilli and spirillum types. After two or three applications of the dye there was a marked diminution of the above mentioned forms and smears examined which were taken after four or five applications failed to reveal the organisms usually associated with Vincent's Angina.

Technic: Material procured from patients was placed at once on slants of soft agar (1 per cent) to insure keeping the specimens in moist condition. These were taken to the laboratory as soon after receipt as possible and planted on blood agar plates. Identification and counts were made after 48 hours incubation. The very marked reduction in count apparently in some of the cases may possibly be due to the fact that the material received after application of the dye was usually heavily stained and as the material was thus planted, it is not altogether impossible that the bacteriostatic action of the dye still manifested itself on the blood agar plate due to the heavy staining of the specimens.

While on a visit to Glenwood Springs, Colo., in August, 1923, I was called in consultation by Dr. W. W. Crook, who is in charge of the hotel, to see a number of cases of streptococcus infection of the throat and it affords me pleasure to quote from a letter I received from him, dated January 24, 1924:

"I used the dye preparation in forty-four cases of tonsilitis with absolutely excellent results in each case. There were several cases among these who were subject to attacks of tonsilitis and they told me their throats cleared up within half the time they ever had under any other treatment."

From his letter of February 22, 1924:

"As you know, when you were in Glenwood Springs, we had an epidemic of streptococcus hemolyticus sore throats, and I was glad you were here at the time so that I could use your dye as it was so much better than anything I have ever used. There is no question but that it was streptococcus hemolyticus sore throats, as the cases were cultured and found positive. I would be very glad to get any other information on this treatment that you may have."

The chief disadvantage of the dye, is its staining properties. As far as the tests and reaction is concerned, especially in the throat and trachea, it may be classified as an astringent antiseptic. In the nasal cavities, it has a stimulating effect and its application is followed by an increased rhinorrhea. My method of controlling the staining of the dye is to apply vaseline on a cotton applicator within the vestibule of the nose and on the skin, externally. Also to the lips and chin. This will prevent the dye from adhering to the mucocutaneous surfaces, and if any remains, it can be removed by using 95 per cent alcohol. For removing stains from hands, linens, instrument cabinets, etc., a 3 per cent solution of hydrochloric acid in 95 per cent alcohol is used.

Of course, you are familiar with the literature on this subject of dyes used during the war in the treatment of various infections, some of which are similar to those I have described, in which acriflavine was used, and since then, in this country at John Hopkins and elsewhere, various reports on other dyes have been recorded.

In conclusion, I wish to thank Dr. John W. Churchman of Cornell University Medical College, for his liberal supply of the dye which he obtained from the National Aniline & Chemical Co., and also for his co-operation and many valuable suggestions in my experiments.

I am deeply grateful to Dr. Morton C. Kahn of Cornell University Medical College for his laborious, painstaking and valuable bacteriological data.

CONCLUSIONS.

The dye has proven of very great value in the treatment of furunculosis of the skin wherever situated. In the treatment of suppurative otitis media, acute and chronic, when brought in direct contact with the diseased membrane, it has also been of value.

In streptococcus infections of the pharynx, tonsils and larynx, it has proven of greater value than any other agent that I have employed in the treatment of these infections.

In sinuses, when localized, and the dye can be applied directly within the cavity, it has a great bacteriostatic action.

In mastoid dressings, it has proven of value in clearing the infection and preventing further complications.

It is also of use when applied within the nose and throat, following surgical procedures, either preventing infection or controlling infections when present.

Since reading this paper before the Society, the dye can now be obtained in tablet form. One tablet dissolved in one ounce hot water makes a 1/200 solution, which is the strength I use most frequently. In some cases, it can be used a little stronger.

130 W. 58th St.

ATYPICAL MASTOIDITIS—CASE REPORT.*

DR. J. M. BROWN, Los Angeles, Calif.

F. B., 23, single, R. N.; always well; never in bed for any illness that she remembers.

July 10, 1923, she went swimming in a public plunge. The same evening went on duty at the hospital. During the night she became very chilly and by morning had a well developed cold in the head. The next evening she was unable to report for duty, and was also suffering from intense pain in the right ear, temperature 101. Examination by an otologist failed to reveal any evidence of tympanic involvement. The next day she was admitted to the hospital and remained there for one week under the care of the otologist. The pain in the ear persisted all this time with very little relief from local applications or aspirin. The otologist said these were no visible signs of inflammation in the ear. His diagnosis was neuritis. The pain in the ear became less at the end of a week, and the patient returned home; however, the pain continued to some extent till August 1.

*Read before the Western Section of the American Laryngological, Rhinological and Otolological Society, Los Angeles, February 15, 1924.

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There was a little daily rise of temperature during this period—99 to 99½. The pain gradually subsided and she went to work on August 6. On September 15, she removed to Los Angeles and entered college. Shortly after this the patient began to have headaches. The headaches would begin in the mornings on the right side, and by afternoon the whole head would ache and throb. The head felt as if it had a tight band around it. The headaches became worse and on October 6, she was compelled to go to bed. October 7, there was a severe chill with temperature 103+. At this time there was a profuse discharge of dark, bloody serum from the right ear. This lasted all day. The quantity was enough to soak a towel every twenty to thirty minutes. By evening the headache had all disappeared, but pain in the ear began and lasted day and night. October 8, there was another chill with temperature 103+, followed by a profuse discharge of dark, bloody serum. October 10, another chill, temperature 102, with very little discharge. October 11, no discharge, but the pain in the ear and the headache returned.

October 12, patient's first visit to my office. Examination of the right ear: There was no swelling, discoloration or tenderness over the mastoid; canal, no swellings or other abnormality, except a small bloody scab on the posterior wall, about one-fourth inch external to the membrana tympani. I removed the scab and a probe showed a small perforation in the skin and roughened bone under the skin; the area around the scab was very tender. The membrana tympana was normal in appearance. The hearing was normal. Left ear, nose, sinuses, pharynx and larynx normal. Tonsils not present, having been removed when a child. My diagnosis was mastoiditis, developing from an infection at the time of swimming.

I sent her to Dr. W. B. Bowman for X-rays. His report was:

"A roentgenological examination of both mastoid regions of your patient, Miss F. D. B., shows the mastoid cells on the left side to be clear and normal in every respect.

"On the right side the mastoid cells are not as well defined as those on the left, but there is no evidence of a breaking down of the cell walls or of any accumulation of fluid or pus in the mastoid cells in the region of the tip. There is a moderate sclerosis of the bone just posterior to the bony auditory canal.

"From a purely roentgenological standpoint will say this patient has a sclerosis of the upper mastoid region just posterior to the bony canal."

October 14, the patient phoned that she had very severe pain in the ear and had been dizzy all day, the slightest change of posture

bringing on the dizziness, and she was nauseated several times. I had her removed to St. Vincent's Hospital. When I saw her at the hospital, in addition to the other symptoms, she now had a spontaneous horizontal nystagmus to the right. Physical examination negative; eye examination negative. Laboratory report: Hemoglobin 75, R.B.C. 4,610,000, W.B.C. 7473, Polys. 75.

On the morning of the 15th, I operated on the mastoid. The outer wall was very hard, like one sees in a chronic mastoid. When I got through the outer wall there was very free bleeding of dark blood, requiring to be packed before I could proceed. After I had removed sufficient amount of the outer wall and removed my packing, I found the sinus exposed for an area the size of a dime and blood pouring out of a small hole in the upper and back part of the exposed sinus. After packing this off I was able to proceed with a regular mastoid and found granulation tissue and diseased bone all around the antrum and upper part of the mastoid. There was an opening through the bone on the posterior canal wall, corresponding to the site of the scab in the canal; also considerable granulation tissue and bone destruction around the horizontal canal. The opening from the antrum to the middle ear had been completely closed, nor did I open it. No pus was seen in the mastoid at any time. Bone scrapings were sent to the laboratory and a streptococcus was found in pure culture from each specimen. The type was not ascertained. After thorough curetting I placed a piece of muscle over the bleeding point and brought the soft structures over the sinus so that pressure on it controlled the bleeding, sewed up tight and applied a tight bandage. The next few days the dizziness disturbed her, somewhat, but this disappeared in about ten days. The wound healed by primary blood clot.

Conclusions: The infection was contracted by swimming in the plunge. The infection evidently went through the middle ear into the antrum and then closed the aditus. This might be considered a primary mastoiditis.

The bacteria was evidently of low virulence and caused a gradual destruction of the bone. An emissary vein was probably severed by the bone destruction over the sinus, causing the hemorrhage.

1136 West Sixth Street.

DEFICIENT VITAMIN DIETS AS A FACTOR IN OTOLARYNGOLOGICAL CONDITIONS.*

DR. J. A. STUCKY, Lexington, Ky.

The frequent publication by the medical and lay press in the past few months of articles written by eminent research workers, on diet in health and disease and the relation of food to immunity and longevity makes the discussion of this paper at this time before this body of otolaryngologists very apropos.

In the discussion of this topic there are two questions which are of vital importance. 1. How much sickness and how much actual disease is avoidable? 2. Is sickness and disease just something which comes to us or a condition engendered within us, or is it induced by a mental or physical state which obtains within us and for which state we are ourselves responsible?

R. G. Jackson (Therapeutic and Dietetic Age), says these are pertinent questions, not often enough asked by the physician of himself or regarding his patients. Undoubtedly our bodies are the products of the food we eat. Our mental or phychic impressions are largely what they are because of our physical conditions, so that they also, are based upon the food we eat. Thus we see that foods assume or should assume a very important scheme in the role of health, and because this is true it should in the prevention of sickness and disease.

We know that with the child as long as we can control its food adapting it to its power of digestion, absorption, assimilation and elimination, it will grow and flourish, but the food must be as delicately balanced as is the child's corporeal system.

Now, if children will thrive upon natural foods and keep well, at what time in their progress towards old age will they fail to keep well feeding upon natural foods? It will be hard for us to answer this question out of our own experience because we rarely see an individual living on natural foods in this day of preserved and artificially prepared foods. Most of the foods have certain vitally essential elements removed in order that the products will not so readily spoil upon the dealers's shelf, although other than this commercial reason is generally assigned. The reasoning is confirmed by McGarrison, McCollum, Osborne and others, in which they have

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produced every known disease of the gastro-intestinal tract in man, also disease in every organ of the body even to the thyroid and pituitary glands by feeding them the artificially refined foods of civilized mankind, and cured them by feeding them the waste products of civilized human food industries—rice polishings and wheat bran.

Life insurance companies report that within the period since white flour and refined and ready-prepared cereals were first introduced, death from old age diseases have doubled, and each succeeding year adds to the percentage of deaths from these old age diseases of the heart, arteries, kidneys, brain, nerves, digestive organs, etc., until now hundreds of thousands of young persons under forty die each year in civilized lands from diseases that rightfully belong to seventy or beyond, diseases to which the simple races who live upon natural foods, yet know nothing of sanitation or hygiene, are practically strangers. If support for the claim that the body can protect itself against disease be still demanded it may be found in the reduction of the death rate from tuberculosis by 50 per cent within the past twenty-five years through a rational regime of living. If proper living can cure tuberculosis and prevent its development by keeping the vital level, (or power of resistance), so high that the tubercle bacillus cannot attack, why cannot other diseases be also prevented? The answer is that by the same means they can be.

Research workers have shown by experimentation and observation that the protective foods are the natural whole grain, milk, eggs, roots, greens, nuts and fruits used as soon as may be after cooking or not cooked at all. The most important of these being milk, vegetables, a leafy salad and fruit.

The British Ministry of Health are convinced of the immunity to many diseases from the use of proper dietary living. As physicians we should know that the vitamins are as powerless to build a normal body, except in association with the proper material for the making of a normal body, as bricks or stones would be to build a skyscraper in the absence of every other single material needed for its construction. It must be continually kept in mind that protein, carbonhydrates, fats, water and vitamins are not the only food factors to be considered in the dietary. These may all be present in normal physiological amounts, and be physiologically and biologically correct as to type, yet the health and growth be of the most disappointing kind. Two other very important factors must enter into the normal dietary, mineral salts and cellulose or waste, and of the mineral salts those having an excess or basic element must predominate.

Such mineral salts and roughage are supplied in normal amounts by the whole grains, leafy vegetables and fruits. When these foods are used freely enough, the physician need not concern himself about vitamins, since they are provided in abundance by these natural food stuffs if they are almost or quite fresh. If any addition be needed when the above named foods are eaten fresh and freshly prepared at home, it would be the addition of milk, eggs, and butter, always an aid in balancing a suspected "deficiency dietary", caused by lack of freshness of green vegetables from bad market conditions, prepared cereals due to factory cooking, or the necessity of resorting to canned varieties not to be despised when better cannot be had, although never a complete fresh vegetable substitute.

The term "deficiency disease" is sanctioned by custom and embraces disorders due to faulty or ill-balanced food, deficient either in quantity or quality in any essential good requisites.

In addition to the feeding of pigeons, rats, mice, rabbits and monkeys, as given in the writings of McCullom, McGarrison, Osborne and Daniels, Clarge of the University of Georgia, reports results of feeding in the production of lymphoid tissue in cats. Especially was this noticeable in the tonsils, adenoids and Peyers Patches. The tonsils and adenoids could be made to increase in size by a certain diet and reduced by a change in this diet. The lymphoid tissue in the bucco-pharyngeal cavity and intestines is regulated by the calorie and fat content of the diet.

In these tests the tonsils in the cat fed the high fat and high calorie diet was 50 per cent larger than in the cat fed the high calorie normal fat, and twice as large as the cat fed normal calories and high fat. In the high fat high calorie diet the tissue exceeds that in the one fed the high protein and high sugar by 47 per cent and 80 per cent. The pharyngeal tonsils in the high fat normal calorie diet are twice as large as where the cats were given high sugar and normal calories.

In the Peyers Patches, all cats fed on high calories the lymphoid tissue was greater than those fed on the normal calories and the cats receiving the high calorie and high fat diet had much more lymphoid tissue than those in which the extra calories were given in the form of sugar and protein. In the case of the normal calories, the one given the high fat has much more lymphoid tissue than the one on higher sugar and the cat which received the high calorie high protein received 10 per cent more calories than the one on the high calorie diet which makes the increase in lymphoid tissues more striking. In the other lymphoid organs there was more uniform

difference attributable to the various diets, except that the mesenteric lymph glands were markedly larger in the two cats receiving high fat than in any of the others. These experiments show that lymphoid tissue located in the bucco-pharyngeal cavity and intestines is regulated by the caloric content and especially the fat content of the diet. High calorie will cause a marked increase in the amount of tissue but the increase will be decidedly larger if the excess of calories are given in the form of fat. These experiments leave an enormous field for investigation but they bring out the fact that diet cannot be ignored as a possible factor in enlarged tonsils and adenoids.

We are now moving toward a truer and more serviceable concept in our work, and the physician is equipping himself to serve scientifically in a biological sense. It is more important to the patient to find why his wound does not heal and his disease continues than to show him a bacillus as a cause for his illness. Let us know bacteriology and pathology and their claims, but know them as necessary knowledge, and not let them obscure the whole biological fact, the continuance of health.

In fifteen years observations especially among the people of the mountains of Kentucky, as well as in private practice, public health clinics and orphanages I have contended that many ophthalmological and otolaryngological diseases were local manifestations of a systemic disorder the chief factor of this being in the intestinal canal. The increasing number of functional and organic disturbances due to diseased tonsils and adenoids, teeth, the large percentage of underweight children, the prevalence of rickets, small jaws and teeth which are irregular, poorly developed and decay easily, with the increasing evidence of endocrine imbalance and dysfunction have become a source of deep anxiety to the medical profession as well as the laity. The cause of these have been proven to be in the food and our colleges and universities are now answering the demand for scientific supervisions of diet in health and disease. Changes in the habits of the population of Europe and America have brought about changes in the diet. Highly milled cereals, potatoes, cane sugar and muscled meats have proven a failure in animal experiments and are proving a failure in human experience.

Mineral salts as provided by nature in food materials is absolutely essential to the continued development and health of man, he being the end result of anatomical and physiological adaptation to these foods. In refining these the salts are greatly disturbed in their relation to other food elements in the grain, which require their presence in order to function as nutrition in the tissues of the

body, and in the proportion to which these salts are removed the remaining food becomes a poison. These salts have building functions to perform and they also regulate the presence, flow and interchange of the body fluids through the osmotic process as well as perform a neutralizing function and regulate the absorption of each other. For centuries the bulk of man's food has been refined into poisons by the taking out of it some of the vitalizing mineral salts with their always associated growth and repair substances. The diet of the average persons and the rapid eating, (swallowing without masticating), causes fermentation in the stomach and putrefactive conditions in the intestines resulting in toxemias which range in intensity from ordinary colds to severe acidosis. We can have excessive fermentation as well as excessive putrefaction in the same individual at one and the same time.

In addition to the effect of food on the digestive organs and those endocrine organs concerned in the relation to the metabolic processes we have increasing evidence (clinical) that many ill-defined ocular, oral, and naso-pharyngeal disorders giving rise to vague ill-health, are due to food deficiency. The greatest deficiency we have found to be the lack of protective material, fat soluble, Vitamin A, found in milk, butter, eggs, etc.

In an article by Dr. G. H. Bell, published in the February, 1924, *Ophthalmologist*, "Reform Diet a Therapeutic Measure in Ophthalmic Practice", which should be read by all, he emphasizes the importance of toxemia of gastro-intestinal origin along with foetal infection as a cause of ocular disease. It is held that heavy starches to be digested in the intestines should not be mixed with proteins, that must be digested in the stomach; and the excessive use of sugar is condemned. The influence of diet in the etiology and therapeutic value of its correction is illustrated with reference to corneal ulcer, keratomalacia, headache, glaucoma, cholelithiasis and other ocular diseases.

I have obtained most gratifying results in the treatment of tinnitus aurium by relieving the intestinal toxemia, regulating the diet and administering the mixed endocrine glands. These glands interact with the other, the whole forming a well balanced and mutually interdependent system. Any irregularity or disease interfering with the supply of one secretion affects all other in a greater or lesser degree. Lesions of the endocrine system are often obscure and it is not always possible to determine which glandular component is at fault, or to what extent one gland is more involved in failure of the hormone balance, and in the absence of a standardized basal metabolism test our treatment must be based on the clinical evidence.

I agree with Llewellyn (*American Medicine*, No., 1923), that there is a lithenic or "rheumatic diathesis"—an innate predisposition to develop certain manifestations under favorable conditions, and its hereditary transference is secured by the transference of a tendency to protein sensitization. The arthritic, cardiac and other phenomena of rheumatic fever are the outcome of anaphylaxis, working through the medium of vascular endothelial poisoning. The responsible antigens may be of bacterial, animal or vegetable origin. The exciting cause in children are often alimentary disturbances, so-called billious attacks—in adults most commonly over-exertion and exposure to cold. To this should be added over-eating and drinking. These same exert their effect through acidosis and acidemia which in the rank and file of our clientele includes those whose food is composed mainly of white bread, margarine, coffee, or tea, sugar, preserves, with a minimum amount of milk, eggs and fresh vegetables. These commoner articles of food as they are prepared for the table are so low in vitamin value that unless they are enriched with a sufficiency of foods in the raw state they are prone to cause ill health, especially gastro-intestinal trouble.

We are all familiar with the spoiled child with a pale, pasty complexion, unhealthy appetite, sluggish bowels, often with cucous stools or enuresis, almost continuous discharge from the nose, takes cold easily, a mouth breather, notwithstanding both tonsils and adenoids have been thoroughly removed. Inquiry as to their food will show that few have a well balanced diet. They crave sweetmeats, chocolates, pastries and other dainties devoid of natural health-giving properties since their excessive use is common.

We are also familiar with the over-worked boy or girl, anemic, static, with acne or seborrhea often with vague psychoses, complaining of nasal and ocular disturbances, who eat irregularly of white bread, margarine and tea, or the carbonated and saccharated pseudo nourishment served at the average soft drink stands. Shall we continue to let a race of these taste-tickling vitaminless drinkers and eaters develop? It is for us as physicians to use our newer knowledge instructing these young people to the end that customs and prejudices may be broken and a more adequate dietary secured for those under our care.

Leading research workers in Europe and America call especial attention to the effect of food deficiency on the digestive organs and those endocrine organs concerned in the regulation of metabolic processes. The great number of ill-defined cases, ocular, aural, and naso-pharyngeal disorders with symptoms of vague ill health which throng our clinics at the present time, concerning which we have

heretofore known little or nothing, are due to food deficiency. These prolonged functional derangements if not relieved result in a true pathology.

The diet which I am now using is practically the same as that being used by Dr. Daniels, Iowa University, and consists of one quart of milk a day, one egg, whole wheat bread for at least two meals a day, butter, three vegetables, not counting potatoes, cereals, three fruits, one of which is raw, besides meats for the older children. If there are any signs of a vitamin A deficiency one or two teaspoons of cod liver oil daily are added. The protective material (fat soluble vitamin) found in milk fats (butter), in limited amounts is given in cod liver oil in very much larger concentration, though quite lacking in lard and vegetable fats.

I believe a safe diet could be worked out for well children at a much lower cost than this, consisting of a whole grain cereal, (including the outer coats and the germ), an adequate amount of fresh milk, (not less than one pint daily), frequent generous servings of tomatoes and other seasonable fruits and vegetables. With these foods rightly proportioned, I believe we could produce physically fit people.

CONCLUSIONS.

Since my first observation trip to the mountains of Kentucky sixteen years ago, I have been able to keep in touch either personally or through the nurses with the majority of cases I have treated.

1. One of the most surprising things noted on the first trip was the rarity with which milk, eggs, and butter were used in the diet of the natives. The children rarely ever drank milk, or used butter and eggs were eaten only once or twice a week. The diet consisted largely of fried foods, coffee, pork and occasionally fresh meat. The vegetables were corn, beans, cabbage, turnips, with fruits raw, dried or preserved.

2. In none of my clinics elsewhere did I find such large masses of lymphoid tissue in the throats or such destructive changes taking place in the nose and ears. Many of you will likely recall your surprise at the number of cases of suppurative mastoiditis, requiring extensive operation, which I reported before this Society ten to twelve years ago. I further noted that when these children were operated and their food changed, adding milk, butter, eggs and cereals to their diet that the entire physical economy underwent a most marked change and where the change in diet was not made surgical treatment for tonsils and adenoids was most unsatisfactory. I did not at that time recognize the endocrine imbalance which I now know existed in most of them.

3. It was also a matter of note that as soon as a child was placed in the settlement school where it could get a well balanced diet, regular hours for sleep and work, there was a decrease in the quantity of lymphoid tissue with fewer cases of discharging ears, and after a few months with little or no treatment except by the nurse, practically none of these existed.

4. After my second clinic, in a paper in 1910, I said the problem of the mountains, including the eyes, ears, nose and throats of the children would be solved by the physician, district nurse and school teacher. This has proven true and now nowhere do we find a more promising or healthier set of children than in the settlement schools of the mountains.

5. Another observation was the premature aged appearance of the natives, especially the women. Very few adults have more than half their teeth, the others having decayed, or been extracted because of pain and disease. Here a change in diet with observance of sanitary laws as taught by the nurse and school teacher has wrought changes which are almost unthinkable, even in so short a time. I am still convinced as stated in a paper in 1902-1904, that the average attack of so-called catarrh and inflammation of the ears, nose and throat is a local manifestation of a systemic condition and not a result of direct infection. This systemic condition is due to a hypo-alkalinization or acidosis, usually, and is most readily relieved through the gastro-intestinal tract. The alkali with lactose if used freely and frequently usually gives a most prompt and satisfactory relief in these cases.

6. I am still convinced from my clinical observations that the endocrine imbalance and decrease in the alkali reserve of the average case is due to improper feeding. In some schools and orphanages I have been able to prevent the usual post-festival epidemic of sore throats, noses and ears by carefully regulating the diet of the children during the season, keep them away from the usual over-indulgence of these festival occasions.

7. We have fewer cases of acute otitis media which require myringotomy for relief, fewer sore throats (tonsillitis), and a large decrease in running noses.

I feel that we are on the verge of the solution of the greatest problem confronting the medical profession, the problem of nutrition, and to the otolaryngologist deficient vitamin diets is a most important topic for careful consideration.

CASE REPORT: PEANUT IN BRONCHUS NINE WEEKS. BRONCHOSCOPY. RECOVERY.

DR. T. R. GITTINS, Sioux City, Iowa.

Jan. 29, 1924. Zilda L., age 5. Nine weeks ago while eating salted peanuts had a severe choking spell. Much difficulty in breathing immediately followed. The next day temperature 104° dyspnea and cough. Physician diagnosed "pneumonia, left lung". After ten days in hospital, diagnosis of "empyema" was made, rib resected but no pus found. Patient continued to run septic temperature, had profuse night sweats and gradual loss of weight and strength. Was in bed in the hospital for five weeks. At the end of this period a diagnosis of tuberculosis was made, but was not confirmed by finding the organism. During these weeks no search for foreign body was made. Several X-rays of chest were taken, which were thought to rule out foreign body.

Examination: Patient very much emaciated, very shallow rapid respiration and cough. No expansion of the left chest, very feeble breath sounds over the left apex. No breath sounds over the rest of the left lung. Scar on left back indicating rib resection. Loud tubular breathing over all of right lung. Temperature 99°, pulse 86, respiration 32, WBC 21,000. X-ray of chest shows the left side affected, except for small area at the apex. During the first day patient refused all food and during the night perspired profusely. Cough kept the patient awake most of the night. On the morning of Jan. 30, the day after admittance, upper bronchoscopy was done without anesthesia, No. 4 Jackson bronchoscope. In the left bronchus were several pieces of peanut, one quite large. While attempting to remove these there was a gush of thick fluid from the left bronchus. A quantity of this came out through the bronchoscope.

A suction catheter was introduced and considerable more purulent material was aspirated. There were a number of small pieces of peanut in the aspirated fluid. The examination was discontinued after ten minutes and patient returned to bed. There was practically no reaction following the bronchoscopy, in fact the dyspnea was much less than before. The next day she began to eat, there were breath sounds over all the left lung, the cough was now loose and there was considerable expectoration. Patient improved very rapidly in every

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way and four days after the first bronchoscopy another upper bronchoscopy without anesthesia was done; this time there was only thick mucous aspirated from the bronchus. There was no evidence of any foreign body and very little swelling of the mucosa of the bronchus or trachea. There was practically no reaction following this bronchoscopy and child improved rapidly each day. On Feb. 6, temperature was normal, patient eating and sleeping well, no night sweats, breath sounds over all of the left lung, with some moist rales in base. Feb. 7, patient up in wheel chair, temperature normal, appetite good, blood count 14,000. Feb. 9, twelve days after entering hospital, patient was dismissed with normal temperature, normal blood count, good expansion of the left chest, good breath sounds, only a few rales in left base. On Feb. 23, two weeks after patient was dismissed, a letter from the patient's mother said she was up and around each day and rapidly improving in weight and strength, had no cough and was eating and sleeping well. A few days ago, nine weeks after the first bronchoscopy, another letter from the mother and family physician stated that the child was apparently in normal health, her weight and strength had returned and she was playing and living normally. Physician reports normal breath sounds over entire left lung. A few pleural rubs in area where rib was resected.

REMARKS:

1. Definite history of aspiration of foreign body, still patient was treated as pneumonia, empyema and tuberculosis by four doctors over a period of nine weeks.
2. Rapid recovery after removal of foreign bodies and aspiration of mucus and pus.
3. Two bronchoscopic examinations four days apart without anesthesia. No reaction, general or local, but rather a rapid improvement.

AN INVESTIGATION FOR SAFER INSTRUMENTS.*

DR. SIMON L. RUSKIN, New York.

The problem of teaching operative technique with greater safety to the clinic patient is one that demands special attention. Even though a student may qualify in his cadaver work, still operative work on the living brings with it a sense of responsibility that is felt more by the teacher than by the student. In fact, the student when working under the supervision of an instructor will be less careful than if the case were placed entirely on his own responsibility. This feeling of freedom from responsibility encourages carelessness in technique and asepsis and gives rise to the greater frequency in complications observed in the various clinics as well as the poorer operative results.

This condition must be combated not only by demanding strict adherence to good surgical technique and asepsis from those working in the clinic but also by the investigation of safer operative procedures and instruments. As a result of such investigation I have devised five new instruments. The antrum needle and the guarded septum chisel have already been described in previous issue of *THE LARYNGOSCOPE*. They have proven not only safer in use but also more practicable. The septum ethmoid forceps, tonsil grasper and nasal grasping forceps were more recently developed.

The septum ethmoid forceps was devised to counteract the danger of fracturing the perpendicular plate of the ethmoid and also to hold the fragment after it has been severed. The instrument is modelled on the style of the Brünings forceps which is both powerful and handy. The biting part is different. As can be seen from the illustration No. 1, when the mouth of the instrument is closed the jaws cut through completely above and grasp the fragment below so that one can break away the bone below the grasp but cannot break above, thus avoiding the danger of fracturing the perpendicular plate of the ethmoid upwards to the cribriform plate. The mouth of the instrument is small enough to keep from obscuring the vision during work and the

*Reported from the Nose and Throat Department of the New York Post-Graduate. Service of Dr. C. J. Imperatori.

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handle is very conveniently placed. We have also found the instrument useful in removing the quadrilateral cartilage after the incision has been made.

The tonsil grasper, illustration No. 2, is a new model. The double shank permits the use of a light and delicate instrument possessed of the strength of the larger heavy ones.

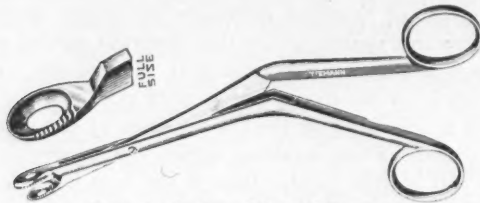


Plate 1. Septum Ethmoid Process.

Instead of having prongs, the grasping portion is similar to the Allis tissue forceps and has great tenacity. It occupies less space in the mouth and thus facilitates dissection in children. Only the child's size instrument is made at present.

The nasal grasping forceps supplies a need that many of the students have felt. In addition to its small size which allows of

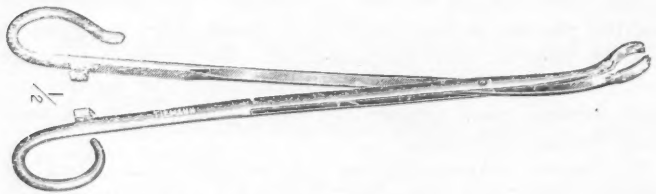


Plate 2. Tonsil Grasping Forceps.

good vision in the nose when the instrument is being used, it can be locked after the tissue is grasped. Occasionally after removal of a portion of the middle turbinate the freed fragments fall posteriorly and offers a little difficulty in removal, especially if it becomes wedged in between a deflected septum and an enlarged inferior turbinate. With the use of this instrument the piece can easily be grasped or else the portion of middle turbinate that has been cut through and is ready for separation by the snare is grasped with the forceps and the snare passed over it. After separation, the portion of turbinate attached to the instrument falls out with it. The forceps is also useful in

removing the posterior tip of the inferior turbinate. The tip is clamped and the snare passed over it. After separation the tip comes away with the instrument thus avoiding the unpleasant effect of the patients occasionally swallowing the freed part. The removal of polyps is facilitated in similar manner.



Plate 3. Nasal Grasping Forceps.

These instruments are described with the hope that they will prove as useful to others as we have found them.

I wish to express my gratitude to our chief, Dr. Imperatori, for his kind supervision of the work and hearty encouragement.

351 West 86th St.

A NEW ELEVATOR FOR SUBMUCOUS RESECTION.*

DR. M. C. MYERSON, Brooklyn, N. Y.

This instrument is offered as an aid in the *elevation* of the mucous membrane of the septum, which so frequently occasions the operator considerable difficulty. The writer refers particularly to marked deformities of the septum. Deviations and convexities of the acute type, with their distal surfaces out of the line of vision, can be handled with facility and assurance with the elevator here pictured. For elevating the mucosa over spurs and ridges without tearing the membrane this instrument has been found of value.

The instrument consists of a slender hexagonal handle eight inches long, each end of which tapers almost to a point. Upon either end there is superimposed a small sphere, one being $1\frac{1}{2}$ mm. in diameter, while the other is $2\frac{1}{2}$ mm. in diameter. One end is bent at an angle of 45 degrees, while the other is bent at



an angle of 60 degrees. The shafts carrying the spheres are of metal, which is of sufficient resistance that there will be no bending during the operative procedure, but malleable to the extent that the instrument can be bent to approximate the deformity of the septum which is to be corrected.

The mucous membrane cannot be torn if the operator keeps the ball against the cartilage or bone of the septum during the operation. After the initial incision of the mucous membrane, a small area of the membrane is elevated with a sharp elevator of the Freer, Ballenger or Mackenty type. When a submucous space sufficient to permit the introduction of the sphere has been established, the elevator is used. The ball hugs the cartilage and bone during the process of separation.

This elevator is simple and easy to handle, and with the observance of the single rule of hugging the firmer structures, the time of operation is considerably shortened and the bleeding minimized.

198 Lincoln Place.

*Department of Laryngology, King's County Hospital. Service of Dr. Hubert Arrowsmith.

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THE NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

April 23, 1924.

(Continued from page 592.)

A couple of years ago it was found by Citelli that there exists a pharyngeal or accessory hypophysis and that the beneficial effect caused by the removal of adenoids may have a great deal to do with the change of this part of the hypophysis, and he thought that the increase in the weight of the children after adenectomy may be due to the removal of the pharyngeal hypophysis.

Dr. McCULLAGH said he had had the pleasure of seeing most of these cases of Dr. Hubert's; who had diagnosed the trouble in numerous patients coming to the clinic with mild complaints, but no gross change in the nose or throat. In times past there has been an inclination to regard them as neurotics and give them simply some placebo, trying to get rid of them. These patients are really suffering, however, and Dr. McCullagh said he had learned to turn over all these so-called neurotic patients to Dr. Hubert, and the results obtained by him in many of them were very gratifying.

Dr. MACKENTY also spoke in commendation of the work which Dr. Hubert is doing; he did not think all the men in the Manhattan Hospital realized how good he was, and he had himself profited very much by Dr. Hubert's observations of clinical conditions. It was one of the most valuable pieces of work being done in the Manhattan Hospital today. Two years ago he had begun using Dr. Hubert's methods in rhinorrhea cases and quite a few of them responded very favorably to the treatment. The Manhattan Hospital was very fortunate in having a man of this standing on its staff, for his work was very unusual and very good.

Dr. KING: I wish to speak of the use of local anesthesia for adults with thyroid disturbance who require tonsillectomy.

It has been my privilege to operate upon and remove the tonsils in a number of patients who had various degrees of thyroid disturbances, from the simple hypertrophy to the severe exophthalmic type.

Formerly I did tonsillectomy on these patients with general narcosis. Lately, however, I have been operating upon nearly all of them under local anesthesia, following a technique which I have published.

In these cases, the patients are bad risks for operation under all circumstances and every safeguard for their safety should be thrown around them.

A tonsillectomy under local anesthesia can be successfully done with less adrenalin according to my technique than is required for the Goetch test, and I have found it most satisfactory.

Recently I removed the tonsils in a very satisfactory way from a patient 55 years old, with a large goiter and exophthalmos. She made a good recovery. Later she was given a general anesthesia for the removal of the goiter and did under the anesthesia.

In my experience all of these patients have done well under local anesthesia and I am convinced that local anesthesia for tonsillectomy in these patients is a far safer procedure than a general anesthesia.

Dr. HUBERT said that in most of the hyperthyroid cases that had diseased tonsils he had removed them under general anesthesia and had had very good results. When he used local anesthesia, he did not use any adrenalin; novocain was sufficient and there was no need to use adrenalin.

In regard to the hypophysis: He had been very much interested in that work. In some of the cases of rhinorrhea and sneezing he had

used pituitary substance, but never had any results; he could not see any practical result from the use of pituitary extract or the removal of the adenoids in those particular cases. Of course there is no question but that the removal of adenoids does good, but in those cases in which he was interested, it did not seem to be of value.

In regard to sensitization: he had had a few cases that were sensitive to certain things; and even some of these cases improved on thyroid extract. Of course, desensitization is the proper procedure. It showed that in some of these cases the underlying process was probably related to the endocrines.

Replying to Dr. McTiernan, Dr. Hubert said that within a day or two after the application of radium the child got better, and then in two or three weeks it again had mild symptoms, and therefore was given another dose of radium. The second child, the girl, was now practically well. The first child, which he thought had a retropharyngeal abscess, still has some nasal obstruction; but, now it is safe to remove the tonsils and adenoids. In cases with enlarged thymus gland, the tonsils and adenoids should not be removed until after the application of radium to the thymic region.

Cyst of the Mediastinum—Probably Dermoid; Paralysis of left Vocal Cord (Abstract). Dr. Harmon Smith.

(Paper to be published in full in a subsequent issue of THE LARYNGOSCOPE)

The patient, a man 57 years old, came to the clinic of the Manhattan Eye and Ear Hospital in April and was admitted to the hospital on the 25th. He complained of hoarseness almost amounting to aphonia. He had lost much weight and was suffering from general physical debility. His past history was more or less negative, and he denied lues. In the Spanish-American war he had had a sunstroke. In the year previous to coming to the clinic, he had fallen from a scaffolding, and soon after began to lose his voice and weight, and had a cough. In the two months before admission he had lost fifteen pounds.

Physical examination showed a man very markedly emaciated; some sagging on the left of the chest and slight dullness over the upper left side, but other signs were more or less negative. The blood showed a negative Wassermann reaction; the relative amount of white and red blood cells were practically normal; hemoglobin, 75 per cent; respirations between 20 to 30. Urine negative except for excess of urea. The sputum examination showed no tuberculosis bacilli and no blood. The laryngological examination was negative, except that the left arytenoid was fixed and immovable and the left vocal cord paralyzed midway the median line and complete abduction, presenting a picture of typical recurrent laryngeal paralysis. Otherwise the larynx, trachea, and pharynx were about normal. A bronchoscopic examination was made by Drs. C. Imperatori and Knopf, who reported that the trachea and bronchi (upper part) were normal except that considerable mucus was attached to the bronchial wall. The right bronchus was normal; the left bronchus, however, showed complete obstruction by a bulging mass. A slight pulsation was noted in the tumor mass, which seemed to be directed by contra coup. It was thought that it might be a cyst, and it was reported as a probable cyst with recurrent paralysis of the left laryngeal nerve.

Then an X-ray examination was made, as shown by the plates—a round tumor, perfect in contour. Dr. Law thought it might be an aneurism, but was not certain, and Dr. Houghton referred the case to Dr. Lewald to take more extensive pictures. In the report he said "there is a large mediastinal shadow, 11 inches in diameter. It is pretty regular in contour, and pulsates at its lower extremity. It gives every evidence of a cyst, which from previous observations and autopsies on mediastinal tumors would indicate that it is a dermoid cyst."

The patient was kept under observation in the Manhattan Eye, Ear and Throat Hospital for eleven days, and was then dismissed, with the promise of returning later for observation and an operation. In dis-

cussing the matter with Dr. Phillips he thought it probable that it could be removed. After the patient left he was finally located in a Brooklyn hospital, and was at present rapidly declining.

DISCUSSION.

Dr. LEWALD said that the extreme regularity of the contour was the most striking feature of the tumor, and for that reason he had put it in the dermoid class, rather than a malignant growth or even an aneurysm. There was no evidence of any attachment to the heart; in any position one can outline the entire tumor, separate from the arterial system or heart so that aneurysm appears to be safely excluded. Some pulsation may be seen at the lower border, but that is easily accounted for by the transmission of pulsation from the heart, for cases have been seen where a mistake has been made by seeing transmitted pulsation interpreted as expansile pulsation. There is also an eventration of the diaphragm in this patient. One might think of that as associated with a nerve lesion, but the condition has been seen in several individuals without any nerve lesion. An autopsy was performed on one case in which the eventration of the diaphragm was due entirely to congenital absence of the muscle and it is believed that many cases of this nature may be found, and that in the past it was a mistake when it was considered that a lesion of the nerve caused the paralysis. In this case it may be disregarded as having any relation to the tumor. The condition is sometimes diagnosed as hernia of the diaphragm, but that is a mistake. If you outline the stomach you can see that it comes up against the left half of the diaphragm. That is seen especially well on a lateral exposure. It looks at first glance as if the stomach went through the diaphragm, but it is not through the left side of the diaphragm in any place. Dr. LeWald then showed by means of lantern slides the differential diagnosis between aneurysm and tumor of the lung.

Dr. HOUGHTON: The X-ray plates by Dr. LeWald plainly indicate the nature of the pressure which caused the left laryngeal nerve paralysis in Dr. Smith's patient. I saw this man and made a diagnosis of probable mediastinal tumor by usual clinical examination. His arterial systolic pressure was equal on both sides at 146/70 m.m., a fact which in the absence of dullness in the left second costal interspace and in the absence of any degree of aortic regurgitation, presumably ruled out aneurysm.

Advanced mitral stenosis with dilatation of the left auricle may cause pressure on this nerve with loss of voice, but this patient had no manifestations of cardiac disease of any kind. The percussion boundaries and sounds were normal. Sub-sternal thyroid was thought of and this cause of course could not be excluded with certainty without the help of the X-ray.

The next line to consider was that of tumors of a possibly persisting thymus or of the thymic curtain or, as it is sometimes called, the sub-sternal omentum. The patient did not have the external appearance of one suffering prior to puberty of either persisting or enlarged thymus gland. Tentatively, this possible diagnosis was then discarded. The physical examination of the chest by percussion showed extension of a normal sub-sternal dullness far to the left in the third and fourth interspaces. The shape of this was afterwards shown to correspond very closely to the shape of the tumor as revealed by X-ray. Voice sounds were diminished over this area and the breathing sounds were either absent or much diminished.

Of the lung examination in general it should be said that the right lung was clear and the lower lobe of the left showed the usual signs of mechanical obstruction to air flow in that there was marked bronchitis and emphysema.

Blood chemistry in this patient did not indicate any metabolic disorder. I afterwards saw Dr. Imperatori's examination through the bronchoscope and the point of extrinsic pressure on the left bronchus below the bifurcation was plainly visible.

DR. MYERSON said that when he first saw these pictures he thought there might be some way of determining the question bronchoscopically. Dr. LeWald's case which broke down and drained through the bronchus, with the disappearance of the cyst, led him to believe that it would not be long before we will be able to drain these cysts bronchoscopically. That is certainly within the realm of probability.

DR. SMITH said he had made the suggestion to Dr. Imperatori and to Dr. Knopf that they should examine it with the possibility of using a canula to withdraw the fluid, but that at that time they were not certain that it was not an aneurism. The man left the hospital and selected Brooklyn in which to shuffle off this mortal coil.

DR. KNOPF said he had been promised an autopsy if the man died in the institution over there.

A Case of Vincent's Angina. Dr. Samuel McCullagh.

The multiplicity of remedies suggested for the treatment of lesions due to the spirilla of Vincent is most eloquent of the inefficacy of all. The arsenical compounds, such as salvarsan, which we hoped would be specific, have proved disappointing. No one was ever satisfied with the caustic agents, largely on account of the danger of devitalization of contiguous healthy tissue, thus affording new pastures for the organism to feed upon. The main object in reporting this case is to call attention to a method of treatment which, in my hands, has been useful in four cases, in the hope that others may test it and determine its value. These cases in which the tonsils were involved cleared up rapidly under the insufflation of powdered aspirin into the crypts combined with its use as a gargle. I have used aspirin in this way, as suggested by Fetterolf of Philadelphia, for many years in the treatment of acute follicular tonsillitis and, as these cases all superficially resembled this disease, it was instituted when they were first seen. As improvement was noted it was continued until the smears from the throat were negative for spirilla and all redness and acute inflammation had subsided. All the patients were healthy men of between 30 and 40 years old. In all, the teeth were in good condition, with no evidence of pyorrhea. In one case there was a recurrence one month later.

I think that the usefulness of this drug may be limited to tonsillar infections where it can be kept in contact for a considerable period of time. On superficial ulcerations it is likely to be washed away too quickly for benefit to ensue, though Anthon of the Berlin Polyclinic obtained good results with a 5 per cent solution of salicylic acid to which glycerin had been added. This is the only reference I have found to the use of the salicylic acid compound in this disease.

I shall report in detail only one case as it presents some unusual features:

Mr. O. consulted me on March 17, 1924, complaining of a sore throat, which had first been noticed the day before. Voice very thick. Dysphagia slight. No palpable adenopathy. Temperature 99%°. Pulse 80. Examination showed a marked edema of the uvula, but the tonsils showed no evidence of acute inflammation. Multiple punctures were made in the uvula and the patient was sent home to bed and an aspirin gargle ordered. There was not much change the next day, but, on the following day (March 19), the whole soft palate and anterior pillars were covered with a thin gray membrane, looking exactly as though they had been painted with a strong nitrate of silver solution. Removal of this membrane left a raw surface. A smear showed numerous spirilla. The area of the membrane gradually contracted though the ulcerative process did become fairly deep on the right tonsil. By March 31 complete resolution had occurred. At no time was the temperature elevated above 99%° (by mouth). Nor was dysphagia, except for hot things, marked. The prostration seemed out of proportion to the local condition.

Another case, seen for the first time April 2, 1924, also showed a thin membrane over the pillars and soft palate as though strong nitrate of silver solution had been applied, which developed overnight.

These two cases are the only ones I have ever seen presenting this peculiar condition.

DISCUSSION.

DR. SMITH asked what was Dr. McCullagh's experience with regard to pain. He had talked with several men who were in the medical military service abroad and they all affirmed that their patients did not suffer pain. He had himself yet to see a case that did not complain of considerable pain. There seemed to be a diversity of opinion on this subject.

DR. McCULLAGH replied that the pain was very slight in all these cases. In one case the prostration was extreme and out of all proportion to the local condition. It was with great difficulty that the man could walk three or four blocks; he was exhausted after a slight effort, even after two or three weeks when the throat was macroscopically clean.

DR. MACKENY suggested that it might be a fatal disease, and told of two cases that he had seen a year ago that died; the patients were young, vigorous healthy adults who died of Vincent's angina inside of six weeks. They did not have very much pain, but exclusive deep spreading ulceration of the throat.

DR. KNOFF told of cases he had treated successfully in 24 to 48 hours, with phenol neutralized with alcohol.

DR. LORE said the subject of Vincent's angina was very fascinating. He said he had two cases of acute otitis media in which these organisms were recovered.

It is not always a clinical entity. In children it is often super-imposed on a diphtheretic infection, and in adults is often associated with syphilis.

Most any antiseptic used with care will give brilliant results and if acetyl salicylic acid in powder form will give equally good results, it is the method of choice. Dr. Lore said he shall be very glad to try it in his next case.

DR. BIDDLE told of a case that was prepared for the operation, of resection of the glands on both sides of the neck. When the patient opened the mouth patches of ulceration were seen, and a smear taken which showed Vincent's angina. The case was treated with carbolic acid, then neutralized with alcohol and alkali and recovered in ten days or two weeks. Trichloroacetic acid has also cleaned a number of cases.

DR. GEORGE D. WOLF said that in cases of Vincent's angina one must always bear in mind that this condition is at times a cojourner of some other grave constitutional disease, especially acute lymphatic leukemia. He cited a case whom he saw in consultation about six months previously, with a history that two days ago a boy six years of age had some bleeding from the throat—his temperature was 101° and his pulse 120. Examination of the throat revealed ulcerations on both tonsils and a dirty gray membrane. Diagnosis of Vincent's angina was made, a smear of the throat was ordered as well as a blood count to determine the possible presence of acute lymphatic leukemia. Both diagnoses were substantiated by the laboratory. The child was taken to Mt. Sinai Hospital where he died on the fourth day from the onset of the symptoms. Autopsy confirmed the diagnosis of acute lymphatic leukemia.

While we are practically helpless to do anything for our patients with this disease, it relieves the attending physician of a great moral responsibility, if the parents are warned in time about the grave outlook.

DR. McCULLAGH said the main reason for reporting the case was not the fact of its being Vincent's angina, but the fact of the very rapid spread of the membrane within less than twenty-four hours. That was the particular point of interest in two cases. One day the soft palate was clean, and the next morning it was covered by a thin translucent membrane.

Radium Therapy in Chronic Tonsillitis. Dr. G. Allen Robinson.

A. R., Case No. 270, 486. Female, age 43, was referred to the Radium Clinic of The Manhattan Eye, Ear and Throat Hospital, September 5, 1923, by Dr. A. E. Neergard.

ative tonsillar tissue and diseased lymphoid tissue in nose and throat not easily removed surgically.

DISCUSSION.

DR. J. E. WELCH told of the case of a woman of 30 years who had been brought into Queens' Hospital for supposed diphtheria, with a very free-growing sloughing membrane. He had asked particularly about the pain, and there was no pain. One may think of Vincent's angina as a mild affection but it may prove fatal. This patient died in three days after she was first seen.

Radium in Epithelial Neoplasm of Larynx with Fatality. Dr. Robert C. Howard, New York.

This patient at the time he presented himself for treatment, sixteen months before he died, was 57 years old, born in England, accountant by occupation, always had a weak voice, but for the year previous was definitely, continuously and progressively hoarse. He was negative for tuberculosis and syphilis. There was a sessile, globular, firm mass on the upper surface at free margin of left cord near anterior extremity. This was removed by snare and reported by the pathologist as epithelial papilloma of larynx. The cells are atypical and while there is no sign of infiltration or even of downward growth, regard the lesion as dangerous.

The growth rapidly recurred, consultations were held and it was decided to use radium. Three radium treatments were applied under the supervision of the chief radiologist of a leading radium institution in this city, and at the end of four months no signs of growth were visible and the patient was considered possibly cured, although there was some thickening and immobility of the left cord and some hoarseness.

During the next five months no radium was applied, although he was frequently seen and his condition remained good till the end of this period when a recurrence was noted in about the same location and extending beneath the cord. From now on pain on swallowing and speaking were constant and hoarseness progressive and clinically there was little doubt as to the malignancy of the process. A consultation was held and the question of a radical operation brought up, but patient was firmly set against it and radium was again decided upon, and in the six months following six radium treatments were applied at approximately monthly intervals. During this time his condition became gradually worse, although there were periods of marked improvement, and finally laryngeal obstruction became so marked tracheotomy was performed Dec. 27, 1923, and several days later hypostatic pneumonia developed and he died Jan. 3, 1924.

Post-mortem examination showed several ulcers with hemorrhagic mass attached and intense fibrosis and inflammatory reaction, but no definite cancer cells were found in the microscopic examination of the sections. We believe that these were changed or destroyed by the radium.

DISCUSSION.

DR. MACKENY said he did a tracheotomy in the case and observed it from that time until the man died. He doubted very much whether the man had cancer of the larynx, and thought he died of radium burn. No autopsy was permitted, but the house man succeeded in getting the larynx, which was examined by Dr. Eggston. Dr. MacKenty repeated that he thought the man died from the radiation of the larynx, and that he did not have cancer at any time. It would be very unusual if one could not find some cancer cells in this larynx. Dr. MacKenty said he had seen severe radium burns in the larynx and never failed to find malignant cells in the walls after the larynx was removed.

DR. HOWARD said there was no doubt about there being a radium reaction; clinically it certainly was a malignant case.

DR. SMITH said he was more or less interested in this case, having seen it in the Cornell Clinic. Dr. Ewing's report did not say it was epithelioma; he only said it was epitheliomatous in type. This may

have been a beginning cancerous condition that might have become cancer, but the patient fortified himself against any major operation by dying of radium, so that he selected his own method of death, and very likely died an easier one.

Carcinoma of Larynx in a Diabetic. Dr. John A. MacKenty.

Michael A. H., 58 years old, became hoarse two and a half years ago. Ten months later he consulted a Philadelphia specialist who removed a section from the larynx and reported it syphilitic. He treated the patient four months with salvarsan and mercury, without improvement. Six months later another intensive antisyphilitic course of treatment was given, without benefit, and since then he received many similar courses, in spite of which the disease has progressed up to the time of admission into the Manhattan Hospital on Jan. 21, 1924. He was then suffering with dyspnoea, necessitating tracheotomy on Jan. 26. The larynx was filled with a typical malignant mass. There was one palpable gland in the neck; this was removed for examination at the same time the tracheotomy was done; it proved to be non-malignant. The lungs showed a diffuse bronchitis secondary to the obstruction; the cardiovascular system showed signs of arteriosclerosis. The Wassermann reaction was negative. The blood chemical examination on Jan. 24 showed sugar, 166. The uric acid, urea, etc., showed no signs of nephritis. The urine was negative for sugar, albumin, acetone, or diacetic acid.

Before the tracheotomy, Dr. Houghton was asked to put the patient into metabolic shape for laryngectomy. This took one week. On Feb. 2, a laryngectomy was done under combined local and general anesthesia. The patient stood the operation splendidly and afterward made steady progress. The wound sloughed a good deal, but not more than is often seen in cases with a normal blood chemistry. On the twenty-second day after the operation, when he seemed out of danger of a surgical death, he gradually developed a left hemiplegia, which in a day became complete. With it there was a disappearance of the right radial pulse. Semi-coma deepened into coma, involuntary stools and urine, and death in thirty-six hours from the onset of the hemiplegia.

The microscopical report of the tumor showed it to be a squamous celled epithelioma.

The autopsy report showed: 1. Right cerebral thrombosis with large infarct of right cortex; 2. Aorta thrombi with infarcts in both kidneys; 3. Chronic pancreatitis and diabetes; 4. Chronic cholecystitis with cholelithiasis; 5. Laryngectomy wound; 6. Senile and specific aortitis; 7. Fatty degeneration and necrosis of liver; 8. Acute splenic tumor.

This patient was a diabetic with no sugar in the urine. This case is shown to prove that it is possible in the recent advances in the treatment of diabetes to do even a laryngectomy successfully on a diabetic. He was carried successfully across the operation period, when he went out from a condition having nothing to do with the operation.

DISCUSSION.

DR. H. A. HOUGHTON: Dr. MacKenty's patient was a concealed diabetic, that is, he had a high blood sugar without exhibition of sugar in the urine. Such patients show the same reactions to surgery that the frank glycosurics show and are just as much diabetics as those who pass urinary sugar, although as a class they are of milder types. That this patient was in reality a true diabetic was not disclosed until the third day of his stay in the Manhattan Eye, Ear and Throat Hospital. Operation had been decided upon and the patient was placed in the care of the department of metabolism for the usual constitutional preparation. The full blood chemical examination revealed not only a blood sugar of 230 mgms. per 100 cc. plasma, but all the figures for waste nitrogen elements examined for were high normal.

The first point is that this case illustrates the necessity for metabolic examination of all patients over 35 years of age where severe operations are to be attempted to be followed by suitable dietary and other pre-

paration. The reward will be a marked decrease in post-operative death rate. Concealed diabetes is not uncommon in the aged or in those of middle life. Hitherto the condition unlooked for and undiscovered accounts for many unfavorable terminations to operative procedures which would have been obviated with a little foresight and care. Slow healing reactions can almost invariably be accounted for by using latter-day knowledge along metabolic lines.

In the three days following the discovery of a high blood sugar his tolerance was estimated at about 65 grams glucose intake in 24 hours, calculated according to Woodyatt's formulae. By this is meant that he could stand that intake without having the plasma sugar go higher than 140 mgms. With this tolerance determined, it was possible by calculating the intake and giving a suitable amount of insulin to send him to the operating table with normal blood sugar on both occasions, both for the tracheotomy, an operation which was feared was forced on account of the obstruction to breathing, and for the final step the laryngectomy.

During the post-operative period and prior to the appearance of symptoms of thrombosis, the patient was given in fluid form the equivalent of about 100 grams daily of glucose (Woodyatt) and from 20 to 40 units of insulin. There were seven feedings daily and seven insulin injections. The blood sugar ranged from 110 to 130 mgms. and was never higher than 140. Evidently he gained in weight under the treatment. His color improved and mentally he became more alert. It was found that as the wound became infected—all laryngectomy wounds do—that the insulin had to be increased to keep the blood sugar down. This conforms to the well known law that in the presence of infection, the insulin dosage must be increased to cause utilization of a given quantity of glucose.

The patient came into the hospital with a blood pressure of 185/80 mm. His diet was arranged in such a way that it was low in sodium chloride. That fact together with the rest in bed caused a drop in the pressure gradually until in ten days it was 130/65 mm., and remained approximately at that level until the end. The morning of his death the pressure on the right side was nil, due as afterwards proved, to innominate embolism. On the left side, it was 130/70 mm.

So far as the healing of the wound was concerned, it had all the appearance of a normal reaction to the operation of laryngectomy. The diabetic condition as treated caused no retardment in healing nor any other baneful effect. We believe that moderate to moderately severe diabetes is not now a bar to successful surgical procedures providing a little time is given beforehand to prepare the patient, and suitable dietary care with the use of insulin is persisted in during the period of recovery. Up to the present, we have had no accidents due to diabetes since the introduction of insulin. We have, however, been careful to select cases that show good excretory power of eliminating nitrogenous waste products.

DR. SMITH expressed great deference for Dr. MacKenty's ability in such work, and said that there was no one in the country who could do a laryngectomy more successfully or show more judgment and ingenuity in looking after these laryngeal cancer cases, but that he begged to differ with him as to the necessity for doing a laryngectomy when the growth could be reasonably removed by a laryngo fissure. That his own view was somewhat more conservative. He did not see how any one could expect success in any major surgical procedure where there was an increased amount of blood sugar and in an atypical case. It may ultimately be possible with the facilities at our command and the metabolic aid we have to guide and direct us, that our surgery will become more efficient in the future in this type of case.

DR. MACKENY said that in all major surgical procedures in the last twenty years he had had the blood chemistry of the patient taken, and it was surprising how much can be done by putting the patient in good condition for operation.

PHILADELPHIA LARYNGOLOGICAL SOCIETY.

College of Physicians, April 1, 1924.

The Unpleasant End-Results in Well Performed Tonsillectomies. Dr. Chas. W. Richardson, Washington, D. C. (By Invitation.)

DISCUSSION.

DR. JUDSON DALAND said he was glad to discuss Dr. Richardson's paper because of his great interest in the subject, and secondly because it gave him an opportunity of being on the same program with his friend, and to hear his last views on the subject. One thing that impressed him very strongly was the return of some patients from two to seven years after a tonsillectomy, which was well performed, with the same symptoms they had previous to operation. He was extremely interested in this subject because it bears so much on internal medicine. As Dr. Richardson stated, many physicians think removing tonsils is like shelling beans. They have no idea of the conditions one is confronted with. He was rather inclined to think the importance of the tonsils is not understood by doctors in general. They seem to think that after the tonsils are out, that is the end of tonsillar infection. In making these statements, he wished to remind them that, as Dr. Richardson had said, they were not there to fight or assail each other, not to accuse any one of being careless, but to see if some way could be devised to make the unpleasant end results in tonsillectomies pleasant ones. Dr. Daland stated that he did not know the exact pathology or the exact conditions Dr. Richardson described, but he had seen many tonsillectomies, the earliest one at White Chapel, in 1889. He had seen them removed in cubes, by application of the cautery 1889. He had seen them removed in cubes; by application of the cautery at stated periods, and so on; therefore, he was greatly interested in the present development. After a certain number of tonsillectomies one sees a return of granulation tissues. Sometimes there is a small amount of it, and sometimes there is considerable. He thought it would be well to see what that tonsillar tissue is, and why so many do not have it. It is seen only in certain cases; however, they do not know the reason for it. That is something the laryngologist must ascertain. He was intensely interested as to whether it does not occur now and then in removing diseased tonsils that some tonsillar tissue is left. That which is left you may say is infected tonsil. Another thing that impressed him strongly is that tonsils vary so much in size; also they are often a great surprise to the laryngologist when he sees them after removal. It therefore appeared to him to be true that the size of the tonsil varies enormously, and one could readily understand how during a tonsillectomy one might not always get all. He thought that happens now and then, and that one of the efforts the Society should make was to see how rarely it can happen, and devise a way to know when it does happen. A pea size amount of infected tonsil remaining is capable of reproducing the effects of tonsillar infection. After a tonsillectomy it is most important that the throat be carefully surveyed by the laryngologist at stated intervals. It is for him to keep in touch with his patient. Certainly, in his opinion, two examinations should be made at intervals of two months. He urged very strongly these examinations after operations, so as to detect varying from the ordinary.

DR. ROSS HALL SKILERN said every man present had had what might be classed as "tonsillar remnants" after tonsillectomies. It had happened to all of them, and was going to happen in the future. However, they were not always remnants. It had been his experience that when this tissue occurs at the apex of the tonsils, he had left a piece of the tonsil in there. He had not had the capsule. On the other hand, from the bottom or the base of the tonsillar fossa is where he had always seen this so-called "recurrence". The tonsils were taken out perfectly

clean. The patient comes back, and we are mortified to see a little piece the size of the end of one's thumb there. You did not leave it. It was not there. The truth of the matter is simply this: You removed the infected tonsil 95 per cent. What is this that has returned? Is it infected tonsillar tissue, or is it glandular tissue? Will it do any harm? That is something for the laryngologist to discover. He had a feeling that most of this granulation tissue that occurs, occurs when they break through the capsular bed. Supposing in removing the tonsil you pinch the fossa, or use the sponges roughly. It tears with ease. Perhaps, in some cases the capsule has been torn, and one gets a return of granular tissue. He thought it might be well for them to observe that, and see if it happens. Dr. Skillern stated that they use the LaForce almost entirely when they can, and the new Waring suction apparatus when the tonsil is deeply imbedded. He has seen the tonsils taken out perfectly. They were sent to the pathologist for examination, who made the report that "both tonsils were removed entirely, with capsule". Completely removed, and yet, four or five weeks later, on looking in the throat, you see on one side a mass sticking up, and the other side will be perfectly clear. Why does one have a mass on one side and nothing on the other side? He thought there was not a man present who had not seen this thing, and that they should get up and admit it, in order to see if by their united knowledge they could not find some means to cope with it in the future.

DR. HENRY A. LAESSLE stated in dissecting tonsils they often make a curve, and leave a small piece in. Naturally that piece is well supplied with blood, and it is bound to cause new tissue growth. Some years ago, while examining the throat of a child, he saw something that looked like carcinoma tissue. Remembering the age of the patient, he felt that this could not be. The tonsils, including the capsule, had been taken out perfectly. He had a piece of this tissue examined. There were no crypts and follicles in it, so they did the operation over again, but instead of the Sluder they did the Snare, dissecting the mass. Since that time they have had no trouble with that particular case.

DR. LEIGHTON said he was very much interested in this question. He was chagrined just a week or so ago. In the case of a young woman, where he felt he had done a very satisfactory operation. In her case he noticed that the tonsils were greatly inflamed, and that after operation he had a rough fossa. He thought sometimes in a rough fossa one is apt to get more granulation tissue. This small mass of tissue which appears does not belong to the tonsil itself, but if left there hypertrophy will result, so he thought it wise to go down after it and draw it up, when it could be snared off. This could be done in nearly all cases. One gets bleeding, but perhaps that is the bug-bear which has kept so many from doing it.

DR. WILLIAM A. HITSCHLER referred to a case that he saw a year ago. The patient came to him with a sore throat. On looking in the pharynx he found an abscess, which was opened, and the patient recovered. Later this patient returned with another sore throat. It is perfectly obvious that when there is an infection in the tonsils that one can have some infection in the pharyngeal fold. They could not take out all the lymphatic tissue again; they had to leave some in, so the possibility of removing infection after infection in the throat could not be done. All of the tissue could not be removed at any time. He agreed with Dr. Skillern that when there is a recurrence of tonsillar tissue, they had not taken it all out in the first place. About ten years ago, Dr. Hitschler had a patient who had vertigo. He advised him to have his tonsils out. This patient had one chance in five hundred. He took the chance, and the vertigo left him. Several years later this patient returned, and had tissue in his throat.

DR. SAMUEL R. SKILLERN wished to speak of a case he had in February, 1924, which might be of a little interest. The patient came to see him and said he had his tonsils removed by a well known man in New York about twelve years previous. Four years ago he had had the left tonsil

out again, and here was the right one back. The tonsil, when Dr. Skilern saw it, was about the size of a raspberry. He took it out under local anesthesia, and sent it to the laboratory. The report came back, "low grade form of granulation lymphatic tissue." He saw the patient a few days ago, and since the removal of the infected tissue his symptoms, muscular pain in arms and legs, had entirely disappeared.

Dr. PHILIP S. STOUT said he was reminded of a case he had a number of years ago. The patient was a girl of about sixteen years of age whose mother was a trained nurse. She had had her tonsils removed twice before he saw her and there still remained in the bottom of the fossa a small piece about the size of a split pea back of which she was having a peritonsillar abscess every six to eight weeks. This, of course, was extremely distressing and the mother wanted the small piece of tonsil removed at once. This was done. Sometime later he saw the mother and inquired about the patient. She said the girl had some sore throat after the removal of the piece of tonsil but the removal of a decayed tooth, which was on the same side as the peritonsillar abscesses cured her.

Dr. HENRY S. WIEDER said he appreciated the facts that Dr. Richardson had brought home to them. There had been a great deal said about granulation tissue. He thought they should have a definite understanding what they were talking about in speaking of granulation tissue. He could hardly conceive of granulation tissue existing in the fossa six or eight years following tonsillectomy, because it presupposes the existence of an ulcer. In some cases the tonsils are removed absolutely clean. In other cases there is always the danger of leaving a small portion in. Again, the field is bloody, and it is impossible to tell what is tonsillar tissue, and what is not.

Dr. Stout's discussion appears on galley 6

Dr. GEORGE W. MACKENZIE spoke of a patient being cured of vertigo after the removal of infected tonsils. After the tonsillectomy there was a recurrence of tissue, but the patient did not have a return of vertigo.

Dr. RICHARDSON (in closing) thanked the members of the Society for their interest in his paper, and the discussion thereof. He thought it was a difficult matter to explain why this granular tissue returns in some cases and not in others. The reason that many get cases of return tissue in the lower end of the fossa was because they do not get that little vestige of lymphatic tissue in the lower end of the fossa. He stated that he does not use the snare at all. He raises the tonsils by forceps, then takes a pair of scissors and cuts around the tonsil. Naturally there is a hemorrhage. Sometimes it was necessary to spend fifteen minutes getting all the points tied up, but in his opinion that was the most satisfactory way to remove tonsils so as to eliminate recurrence. He said he had had tonsils to return in children, just as they all had had. None of them were immune from it. However, since he has been taking out the web he has not seen any cases come back. He thought they should remember they are working in an area that is difficult. A hemorrhage might occur which would be baffling to one. The field is apt to be more or less obscured by the hemorrhage, and when one gets down toward the base of the tongue he will find that the leaving of a small piece of tonsil is hardly to be observed. There is a type of fossa which one leaves perfectly clean. In about four or five to ten years afterward a mass develops there. He did not believe that had anything to do with the operation, except that he had removed something that Nature did not want removed. In his opinion, it is an effort of Nature to restore tissue that they could not understand. However, he thought they were getting nearer to those things, and the more they were brought out to them, the more they would study them, in order to get the proper solution for the problem, and to give patients the best results in tonsillectomies, with fewer recurrences. He thought the day is coming when the laryngologist will get at least 98 per cent of good, well done tonsillectomies, without recurrence, except in those cases in which Nature develops to baffle one.

